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* * * * * Welcome to STN International * * * * *

NEWS 1 Web Page for STN Seminar Schedule - N. America
NEWS 2 MAR 15 WPIDS/WPIX enhanced with new FRAGHITSTR display format
NEWS 3 MAR 16 CASREACT coverage extended
NEWS 4 MAR 20 MARPAT now updated daily
NEWS 5 MAR 22 LWPI reloaded
NEWS 6 MAR 30 RDISCLOSURE reloaded with enhancements
NEWS 7 APR 02 JICST-EPLUS removed from database clusters and STN
NEWS 8 APR 30 GENBANK reloaded and enhanced with Genome Project ID field
NEWS 9 APR 30 CHEMCATS enhanced with 1.2 million new records
NEWS 10 APR 30 CA/CAPLUS enhanced with 1870-1889 U.S. patent records
NEWS 11 APR 30 INPADOC replaced by INPADOCDB on STN
NEWS 12 MAY 01 New CAS web site launched
NEWS 13 MAY 08 CA/CAPLUS Indian patent publication number format defined
NEWS 14 MAY 14 RDISCLOSURE on STN Easy enhanced with new search and display fields
NEWS 15 MAY 21 BIOSIS reloaded and enhanced with archival data
NEWS 16 MAY 21 TOXCENTER enhanced with BIOSIS reload
NEWS 17 MAY 21 CA/CAPLUS enhanced with additional kind codes for German patents
NEWS 18 MAY 22 CA/CAPLUS enhanced with IPC reclassification in Japanese patents
NEWS 19 JUN 18 CA/CAPLUS to be enhanced with pre-1967 CAS Registry Numbers

NEWS EXPRESS NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT
MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

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NEWS IPC8 For general information regarding STN implementation of IPC 8

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* * * * * STN Columbus * * * * *

FILE 'HOME' ENTERED AT 11:13:26 ON 19 JUN 2007

Page 2

=> file reg

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.21

0.21

FILE 'REGISTRY' ENTERED AT 11:13:38 ON 19 JUN 2007

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STRUCTURE FILE UPDATES: 18 JUN 2007 HIGHEST RN 937778-45-5

DICTIONARY FILE UPDATES: 18 JUN 2007 HIGHEST RN 937778-45-5

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TSCA INFORMATION NOW CURRENT THROUGH December 2, 2006

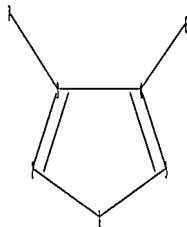
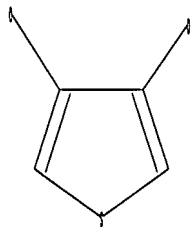
Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=>

Uploading C:\Program Files\Stnexp\Queries\10538995\Struc 2.str



chain nodes :

6 7

ring nodes :

1 2 3 4 5

chain bonds :

3-7 4-6

ring bonds :

1-2 1-5 2-3 3-4 4-5

exact/norm bonds :

1-2 1-5 2-3 3-4 3-7 4-5 4-6

Match level :

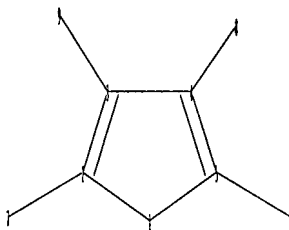
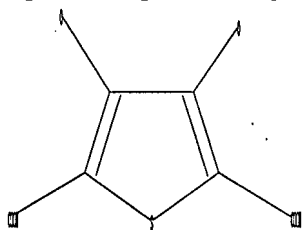
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:CLASS 7:CLASS

10538995.trn

L1 STRUCTURE UPLOADED

=>

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chain nodes :

6 7 8 9

ring nodes :

1 2 3 4 5

chain bonds :

2-7 3-9 4-8 5-6

ring bonds :

1-2 1-5 2-3 3-4 4-5

exact/norm bonds :

1-2 1-5 2-3 3-4 3-9 4-5 4-8

exact bonds :

2-7 5-6

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:CLASS 7:CLASS 8:CLASS 9:CLASS

L2 STRUCTURE UPLOADED

=> l1 full

FULL SEARCH INITIATED 11:13:57 FILE 'REGISTRY'

FULL SCREEN SEARCH COMPLETED - 32001 TO ITERATE

100.0% PROCESSED 32001 ITERATIONS

1046 ANSWERS

SEARCH TIME: 00.00.01

L3 1046 SEA SSS FUL L1

=> l2 full

FULL SEARCH INITIATED 11:14:00 FILE 'REGISTRY'

FULL SCREEN SEARCH COMPLETED - 42 TO ITERATE

100.0% PROCESSED 42 ITERATIONS

20 ANSWERS

SEARCH TIME: 00.00.01

L4 20 SEA SSS FUL L2

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

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343.96

FILE 'CAPLUS' ENTERED AT 11:14:06 ON 19 JUN 2007

10538995.trn

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FILE COVERS 1907 - 19 Jun 2007 VOL 146 ISS 26
FILE LAST UPDATED: 18 Jun 2007 (20070618/ED)

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=> l3 and l4

392 L3

33 L4

L5 33 L3 AND L4

=> d ibib abs hitstr 1-33

L5 ANSWER 1 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2006:236715 CAPLUS
 DOCUMENT NUMBER: 144:321607
 TITLE: Green electrochromic material and device
 INVENTOR(S): Liu, Lu; Xu, Chunye; Taya, Minoru; Ning, Dai; Kaneko, Calen
 PATENT ASSIGNEE(S): University of Washington, USA
 SOURCE: PCT Int. Appl., 30 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| WO 2006029344 | A2 | 20060316 | WO 2005-US32211 | 20050909 |
| WO 2006029344 | A3 | 20070405 | | |

W1: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA

EP 1784686 A2 20070516 EP 2005-796579 20050909

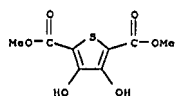
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PRIORITY APPLN. INFO.: US 2004-608438P P 20040909
 WO 2005-US32211 W 20050909

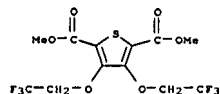
AB Three green electrochromic (EC) materials based on thiophene, and a green EC material based on pyrazine are disclosed. A first thiophene derivative (2,3-di-thiophen-2-yl-thieno[3,4-b]pyrazine), which was previously investigated as a nonlinear optical material, is here disclosed for its use as an EC material, and for its incorporation into an EC device. Synthesis of two new thiophene deriva. (2,5-di(thieno-2-yl)-3,4-di(2,2,2-trifluoro-ethoxy)-thiophene and 2,5-(2,3-dihydro-thieno[3,4-b][1,4]dioxin-5-yl)-3,4-di(2,2,2-trifluoro-ethoxy)-thiophene), and a new pyrazine derivative (2,3-dibenzyl-5,7-di(thieno-2-yl) thieno[3,4-b]pyrazine) are also disclosed, since these materials are all able to selectively change to a green color state, and can be polymerized to achieve a green EC polymer.

IT 879365-98-7P 879365-99-8P 879366-00-4P
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

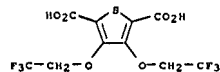
L5 ANSWER 1 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



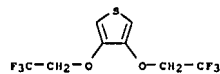
IT 879366-03-7P 879366-04-8P 879366-05-9P
 879366-06-0P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of green electrochromic material and device)
 RN 879366-03-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(2,2,2-trifluoroethoxy)-, dimethyl ester (9CI) (CA INDEX NAME)



RN 879366-04-8 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(2,2,2-trifluoroethoxy)- (9CI)
 (CA INDEX NAME)

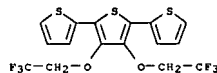


RN 879366-05-9 CAPLUS
 CN Thiophene, 3,4-bis(2,2,2-trifluoroethoxy)- (9CI) (CA INDEX NAME)

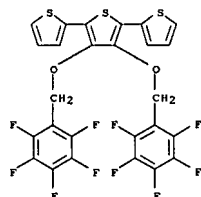


RN 879366-06-0 CAPLUS
 CN Thiophene, 2,5-dibromo-3,4-bis(2,2,2-trifluoroethoxy)- (9CI) (CA INDEX NAME)

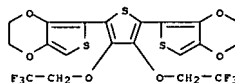
L5 ANSWER 1 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
 (green electrochromic material and device)
 RN 879365-98-7 CAPLUS
 CN 2,2':5',2''-Terthiophene, 3',4'-bis(2,2,2-trifluoroethoxy)- (9CI) (CA INDEX NAME)



RN 879365-99-8 CAPLUS
 CN 2,2':5',2''-Terthiophene, 3',4'-bis[(pentafluorophenyl)methoxy]- (9CI)
 (CA INDEX NAME)

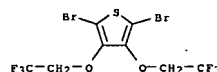


RN 879366-00-4 CAPLUS
 CN Thieno[3,4-b]-1,4-dioxin, 5,5'-[3,4-bis(2,2,2-trifluoroethoxy)-2,5-thiophenediyl]bis[2,3-dihydro- (9CI) (CA INDEX NAME)



IT 58416-04-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of green electrochromic material and device)
 RN 58416-04-9 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, dimethyl ester (6CI, 9CI)
 (CA INDEX NAME)

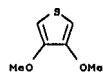
L5 ANSWER 1 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



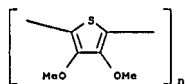
L5 ANSWER 2 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2005:1281732 CAPLUS
 DOCUMENT NUMBER: 144:70210
 TITLE: Preparation of thiophene and polythiophene
 INVENTOR(S): Xu, Liangheng; Li, Xiang; Wang, Qunying; Gao, Yun
 PATENT ASSIGNEE(S): Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 13 pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|----------|
| CH 1616454 | A | 20050518 | CN 2004-10066866 | 20040929 |
| PRIORITY APPLN. INFO.: | | | CN 2004-10066866 | 20040929 |

OTHER SOURCE(S): MARPAT 144:70210
 AB A process for preparing high purity thiophene at high yield is by catalytic or thermal decarboxylation, with copper and/or chromium salt or oxide as the catalyst, in polar solvent such as sulfolane and PEG. Polythiophene is prepared by polymerizing thiophene in the presence of oxidant and anionic polyelectrolyte at 0-50° for 5-30 h at a pH of 1.0-3.0. Polythiophene are useful as transparent conductive film for through-hole circuit board and electroluminescent display device.
 IT 51792-34-8P 120326-42-3P, Poly(3,5-dimethoxy-2,5-thiophenediyl) 121912-91-2P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation of thiophene and polythiophene)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)

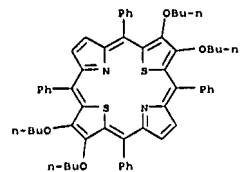


RN 120326-42-3 CAPLUS
 CN Poly(3,5-dimethoxy-2,5-thiophenediyl) (9CI) (CA INDEX NAME)



RN 121912-91-2 CAPLUS

L5 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2004:864059 CAPLUS
 DOCUMENT NUMBER: 142:38039
 TITLE: Synthesis and crystal structures of 2,3,12,13-tetraalkoxy-21,23-dithiaporphyrins and 2,3-dialkoxy-21-monothiaporphyrins
 AUTHOR(S): Agarwal, Neeraj; Hung, C.-N.; Ravikanth,
 CORPORATE SOURCE: Department of Chemistry, Indian Institute of Technology, Powai, Mumbai, 400076, India
 SOURCE: Tetrahedron (2004), 60(47), 10671-10680
 CODEN: TETRAH; ISSN: 0040-4020
 PUBLISHER: Elsevier B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 142:38039
 AB The tetraalkoxy and dialkoxy substituted 21,23-dithiaporphyrins and 21-monothiaporphyrins, resp., having methoxy, butoxy, octyloxy and dodecyloxy substituents at β -thiophene carbons were synthesized and characterized. The X-ray structure was solved for the tetrabutoxy substituted 21,23-dithiaporphyrin and it exhibited a more planar structure compared with unsubstituted S2TPP, whereas the dimethoxy substituted 21-monothiaporphyrin showed a saddle shaped structure similar to unsubstituted S2TPP.
 IT 496800-78-3P 807334-69-6P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (synthesis and crystal structure of tetraalkoxy-dithiaporphyrins and dialkoxy-monothiaporphyrins)
 RN 496800-78-3 CAPLUS
 CN 21,23-Dithia-22,24-diazapentacyclo[16.2.1.13.6.18,11.113,16]tetracos-1,3(24),4,6,8,10,12,14,16(22),17,19-undecaene, 9,10,19,20-tetrabutoxy-2,7,12,17-tetraphenyl- (9CI) (CA INDEX NAME)

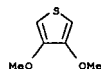


RN 807334-69-6 CAPLUS
 CN 21-Thia-22,23,24-triazapentacyclo[16.2.1.13.6.18,11.113,16]tetracos-1,3(24),4,6,8,10,12,14,16(22),17,19-undecaene, 19,20-dimethoxy-2,7,12,17-tetraphenyl- (9CI) (CA INDEX NAME)

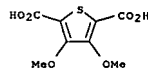
L5 ANSWER 2 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
 CN Thiophene, 3,4-dimethoxy-, homopolymer (9CI) (CA INDEX NAME)

CM 1

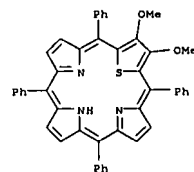
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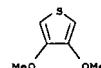
IT 177364-96-4
 RL: RCT (Reactant); RACT (Reactant or reagent) (preparation of thiophene and polythiophene)
 RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)



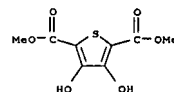
L5 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



IT 51792-34-8P 108199-25-3P 118851-98-2P
 126673-34-5P 177364-96-4P 207802-19-5P
 496800-96-5P 496801-01-5P 496801-09-3P
 496801-13-9P 496801-18-4P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (synthesis of tetraalkoxy-dithiaporphyrins and dialkoxy-monothiaporphyrins)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)



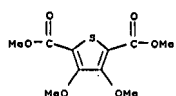
RN 108199-25-3 CAPLUS
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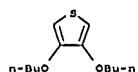
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RN 118851-98-2 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy-, dimethyl ester (9CI) (CA INDEX NAME)

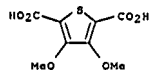
L5 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



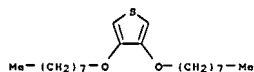
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CN Thiophene, 3,4-dibutoxy- (9CI) (CA INDEX NAME)



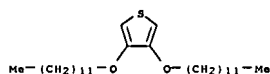
RN 177364-96-4 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)



RN 207802-19-5 CAPLUS
CN Thiophene, 3,4-bis(octyloxy)- (9CI) (CA INDEX NAME)



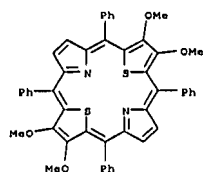
RN 496800-96-5 CAPLUS
CN Thiophene, 3,4-bis(dodecyloxy)- (9CI) (CA INDEX NAME)



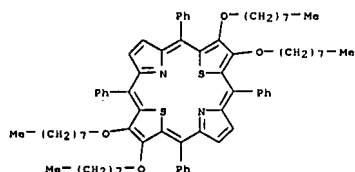
RN 496801-01-5 CAPLUS

L5 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

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807334-70-9P 807334-71-0P 807334-72-1P
807334-73-2P 807334-74-3P 807334-75-4P
807334-76-5P
RI: SPN (Synthetic preparation); PREP (Preparation)
(synthesis of tetraalkoxy-dithiaporphyrins and dialkoxymonothiaporphyrins)
RN 496800-70-5 CAPLUS
CN 21,23-Dithia-22,24-diazapentacyclo[16.2.1.13.6.18,11.113,16]tetracos-1,3(24),4,6,8,10,12,14,16(22),17,19-undecaene, 9,10,19,20-tetrakis(octyloxy)-2,7,12,17-tetraphenyl- (9CI) (CA INDEX NAME)

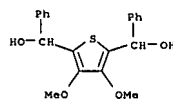


RN 496800-81-8 CAPLUS
CN 21,23-Dithia-22,24-diazapentacyclo[16.2.1.13.6.18,11.113,16]tetracos-1,3(24),4,6,8,10,12,14,16(22),17,19-undecaene, 9,10,19,20-tetrakis(octyloxy)-2,7,12,17-tetraphenyl- (9CI) (CA INDEX NAME)

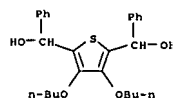


RN 496800-86-3 CAPLUS
CN 21,23-Dithia-22,24-diazapentacyclo[16.2.1.13.6.18,11.113,16]tetracos-1,3(24),4,6,8,10,12,14,16(22),17,19-undecaene, 9,10,19,20-tetrakis(dodecyloxy)-2,7,12,17-tetraphenyl- (9CI) (CA INDEX NAME)

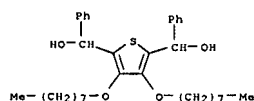
L5 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
CN 2,5-Thiophenedimethanol, 3,4-dimethoxy- α,α' -diphenyl- (9CI)
(CA INDEX NAME)



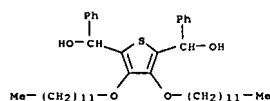
RN 496801-09-3 CAPLUS
CN 2,5-Thiophenedimethanol, 3,4-dibutoxy- α,α' -diphenyl- (9CI)
(CA INDEX NAME)



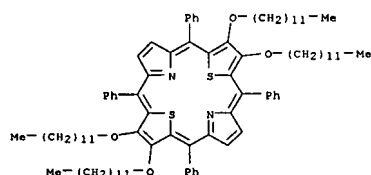
RN 496801-13-9 CAPLUS
CN 2,5-Thiophenedimethanol, 3,4-bis(octyloxy)- α,α' -diphenyl- (9CI) (CA INDEX NAME)



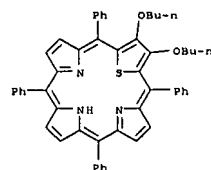
RN 496801-18-4 CAPLUS
CN 2,5-Thiophenedimethanol, 3,4-bis(dodecyloxy)- α,α' -diphenyl- (9CI) (CA INDEX NAME)



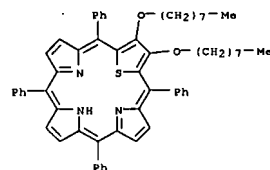
L5 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



RN 807334-70-9 CAPLUS
CN 21-Thia-22,23,24-triazapentacyclo[16.2.1.13.6.18,11.113,16]tetracos-1,3(24),4,6,8,10,12,14,16(22),17,19-undecaene, 19,20-bis(octyloxy)-2,7,12,17-tetraphenyl- (9CI) (CA INDEX NAME)

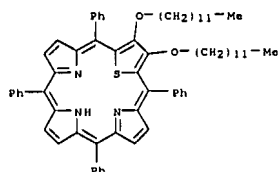


RN 807334-71-0 CAPLUS
CN 21-Thia-22,23,24-triazapentacyclo[16.2.1.13.6.18,11.113,16]tetracos-1,3(24),4,6,8,10,12,14,16(22),17,19-undecaene, 19,20-bis(octyloxy)-2,7,12,17-tetraphenyl- (9CI) (CA INDEX NAME)

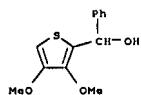


RN 807334-72-1 CAPLUS
CN 21-Thia-22,23,24-triazapentacyclo[16.2.1.13.6.18,11.113,16]tetracos-1,3(24),4,6,8,10,12,14,16(22),17,19-undecaene, 19,20-bis(dodecyloxy)-2,7,12,17-tetraphenyl- (9CI) (CA INDEX NAME)

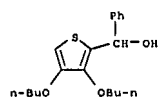
L5 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



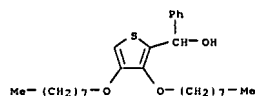
RN 807334-73-2 CAPLUS
CN 2-Thiophenemethanol, 3,4-dimethoxy-u-phenyl- (9CI) (CA INDEX NAME)



RN 807334-74-3 CAPLUS
CN 2-Thiophenemethanol, 3,4-bis(octyloxy)-u-phenyl- (9CI) (CA INDEX NAME)



RN 807334-75-4 CAPLUS
CN 2-Thiophenemethanol, 3,4-bis(octyloxy)-u-phenyl- (9CI) (CA INDEX NAME)



L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:802620 CAPLUS
DOCUMENT NUMBER: 141:304008
TITLE: Fluorinated pi-bridge second order nonlinear optical chromophores and electro-optic devices therefrom
INVENTOR(S): Huang, Diyun
PATENT ASSIGNEE(S): Lumera Corporation, USA
SOURCE: U.S. Pat. Appl. Publ., 20 pp., Cont.-in-part of U.S. Ser. No. 301,978.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|-------------|
| US 2004192942 | A1 | 20040930 | US 2004-757375 | 20040114 |
| US 7109355 | B2 | 20060919 | | |
| US 2002160282 | A1 | 20021031 | US 2001-932831 | 20010817 |
| US 6716995 | B2 | 20040406 | | |
| EP 1760080 | A1 | 20070307 | EP 2006-126949 | 20010817 |
| R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, TR | | | | |
| US 2003107027 | A1 | 20030612 | US 2002-301978 | 20021122 |
| US 6750603 | B2 | 20040615 | | |
| PRIORITY APPLN. INFO.: | | | US 2000-226267P | P 20000817 |
| | | | US 2001-932831 | A2 20010817 |
| | | | US 2002-301978 | A2 20021122 |
| | | | EP 2001-965981 | A3 20010817 |

OTHER SOURCE(S): MARPAT 141:304008

AB Nonlinear optical chromophores are described by the general formula D- π -A (π = a π bridge including a thiophene ring having oxygen atoms bonded directly to the 3 and 4 positions of the thiophene ring; D = a donor; A = an acceptor; and the oxygen atoms are further substituted with a fluorinated group comprising ≥ 3 fluorines). Second order nonlinear optical compns. comprising a polymer matrix and the chromophores are also described. Electrooptical devices (e.g., optical modulators, optical switches, and optical directional couplers) and (e.g., optically-assisted) phased array radar systems are described which employ the compns.

IT 540777-74-OP 540777-78-4P
RI: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

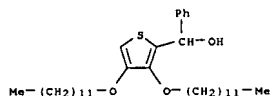
(fluorinated pi-bridge nonlinear optical chromophores and compns. and electrooptical devices using them)

RN 540777-74-0 CAPLUS
CN Propanedinitrile, 2-[3-cyano-4-[(1E)-2-[3,4-dibutoxy-5-[(1E)-2-[3,4-dibutoxy-5-[(1E)-2-[4-(diethylamino)phenyl]ethenyl]-2-thienyl]ethenyl]-2-thienyl]ethenyl]-5,5-dimethyl-2(5H)-furanilydene]- (CA INDEX NAME)

Double bond geometry as shown.

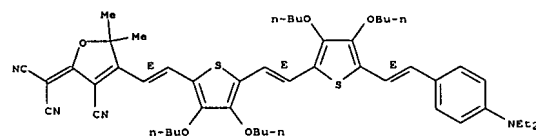
L5 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

RN 807334-76-5 CAPLUS
CN 2-Thiophenemethanol, 3,4-bis(dodecyloxy)-u-phenyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

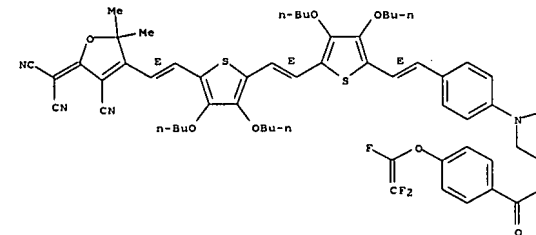
L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



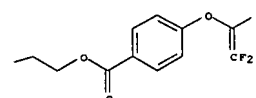
RN 540777-78-4 CAPLUS
CN Benzoic acid, 4-[(trifluoroethenyl)oxy]-, [[4-[(1E)-2-[3,4-dibutoxy-5-[(1E)-2-[3,4-dibutoxy-5-[(1E)-2-[4-cyano-5-(dicyanomethylene)-2,5-dihydro-2,2-dimethyl-3-furanily]ethenyl]-2-thienyl]ethenyl]-2-thienyl]ethenyl]phenyl]imino]di-2,1-ethanediyl ester (9CI) (CA INDEX NAME)

Double bond geometry as shown.

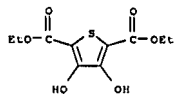
PAGE 1-A



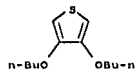
PAGE 1-B



L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
 IT 1822-66-8 126673-34-5
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (fluorinated pi-bridge nonlinear optical chromophores and compns. and electrooptical devices using them)
 RN 1822-66-8 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, 2,5-diethyl ester (CA INDEX NAME)

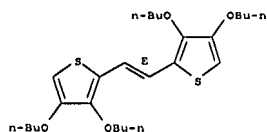


RN 126673-34-5 CAPLUS
 CN Thiophene, 3,4-dibutoxy- (9CI) (CA INDEX NAME)

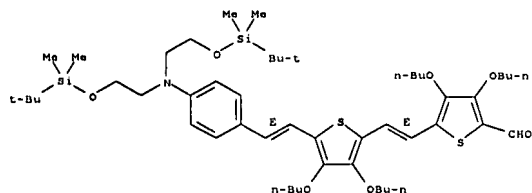


IT 147212-47-3P 400760-60-3P 540777-72-8P
 540777-73-9P 540777-75-1P 540777-76-2P
 540777-77-3P 765317-79-1P 765317-81-5P
 765317-82-6P 765317-83-9P 765317-84-8P
 765317-85-9P 765317-87-1P 765317-88-2P
 765317-89-3P 765317-90-6P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (fluorinated pi-bridge nonlinear optical chromophores and compns. and electrooptical devices using them)
 RN 147212-47-3 CAPLUS
 CN Thiophene, 2,2'-(1E)-1,2-ethenediylbis[3,4-dibutoxy- (9CI) (CA INDEX NAME)

Double bond geometry as shown.

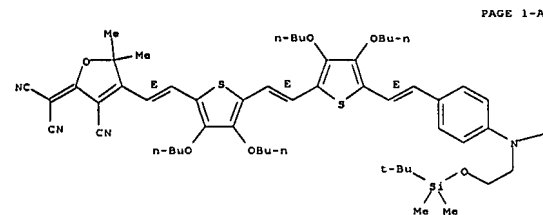


L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
 Double bond geometry as shown.



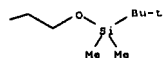
RN 540777-76-2 CAPLUS
 CN Propanedinitrile, [4-[(1E)-2-[5-[(1E)-2-[5-[(1E)-2-[4-[bis[2-[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]amino]phenyl]ethenyl]-3,4-dibutoxy-2-thienyl]ethenyl]-3,4-dibutoxy-2-thienyl]ethenyl]-3-cyano-5,5-dimethyl-2(5H)-furanylidene]- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



PAGE 1-A

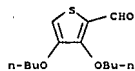
PAGE 1-B



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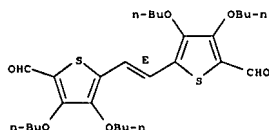
L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

RN 400760-60-3 CAPLUS
 CN 2-Thiophenecarboxaldehyde, 3,4-dibutoxy- (CA INDEX NAME)



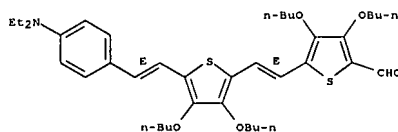
RN 540777-72-8 CAPLUS
 CN 2-Thiophenecarboxaldehyde, 5,5'-(1E)-1,2-ethenediylbis[3,4-dibutoxy- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



RN 540777-73-9 CAPLUS
 CN 2-Thiophenecarboxaldehyde, 3,4-dibutoxy-5-[(1E)-2-[3,4-dibutoxy-5-[(1E)-2-[4-(diethylamino)phenyl]ethenyl]-2-thienyl]ethenyl]- (9CI) (CA INDEX NAME)

Double bond geometry as shown.

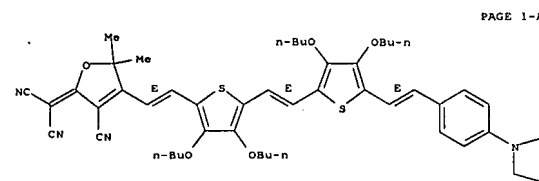


RN 540777-75-1 CAPLUS
 CN 2-Thiophenecarboxaldehyde, 5-[(1E)-2-[5-[(1E)-2-[4-[bis[2-[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]amino]phenyl]ethenyl]-3,4-dibutoxy-2-thienyl]ethenyl]-3,4-dibutoxy- (9CI) (CA INDEX NAME)

L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

RN 540777-77-3 CAPLUS
 CN Propanedinitrile, [4-[(1E)-2-[5-[(1E)-2-[5-[(1E)-2-[4-[bis[2-[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]amino]phenyl]ethenyl]-3,4-dibutoxy-2-thienyl]ethenyl]-3,4-dibutoxy-2-thienyl]ethenyl]-3-cyano-5,5-dimethyl-2(5H)-furanylidene]- (9CI) (CA INDEX NAME)

Double bond geometry as shown.

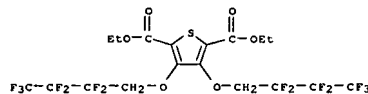


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PAGE 1-B

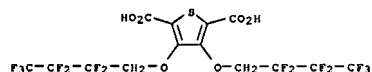


RN 765317-79-1 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)-, diethyl ester (9CI) (CA INDEX NAME)

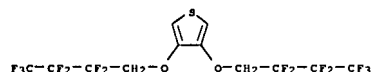


RN 765317-81-5 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)-

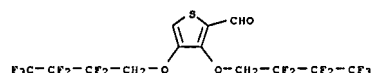
L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
(9CI) (CA INDEX NAME)



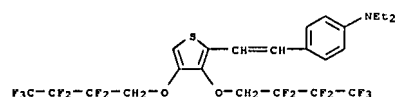
RN 765317-82-6 CAPLUS
CN Thiophene, 3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)- (9CI) (CA INDEX NAME)



RN 765317-83-7 CAPLUS
CN 2-Thiophenecarboxaldehyde, 3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)- (9CI) (CA INDEX NAME)



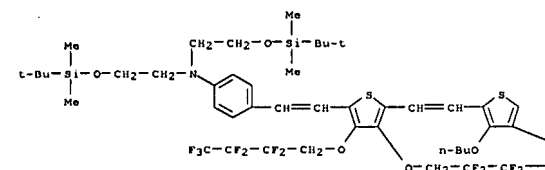
RN 765317-84-8 CAPLUS
CN Benzenamine, 4-[2-[3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)-2-thienyl]ethenyl]-N,N-diethyl- (9CI) (CA INDEX NAME)



RN 765317-85-9 CAPLUS
CN 2-Thiophenecarboxaldehyde, 5-[2-[4-(diethylamino)phenyl]ethenyl]-3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)- (9CI) (CA INDEX NAME)

L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

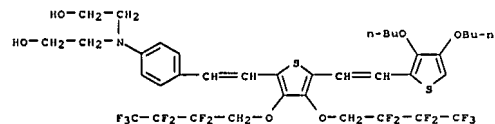
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— CF3

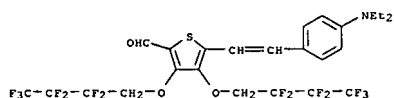
RN 765317-90-6 CAPLUS
CN Ethanol, 2,2'-[4-[2-[5-[2-(3,4-dibutoxy-2-thienyl)ethenyl]-3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)-2-thienyl]ethenyl]phenyl]imino]bis- (9CI) (CA INDEX NAME)



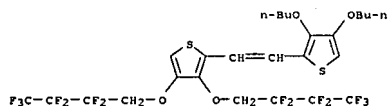
IT 765317-86-0P 765317-91-7P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(fluorinated pi-bridge nonlinear optical chromophores and compns. and electrooptical devices using them)
RN 765317-86-0 CAPLUS
CN Propanedinitrile,
[3-cyano-4-[2-[5-[2-[4-(diethylamino)phenyl]ethenyl]-3,4-

10538995.trn

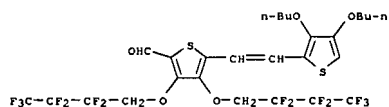
L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



RN 765317-87-1 CAPLUS
CN Thiophene, 2-[2-[3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)-2-thienyl]ethenyl]-3,4-dibutoxy- (9CI) (CA INDEX NAME)



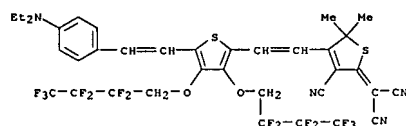
RN 765317-88-2 CAPLUS
CN 2-Thiophenecarboxaldehyde, 5-[2-(3,4-dibutoxy-2-thienyl)ethenyl]-3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)- (9CI) (CA INDEX NAME)



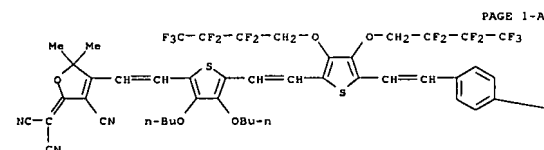
RN 765317-89-3 CAPLUS
CN Benzenamine, 4-[2-[5-[2-(3,4-dibutoxy-2-thienyl)ethenyl]-3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)-2-thienyl]ethenyl]-N,N-bis[2-[[[1,1-dimethylethyl]dimethylsilyl]oxy]ethyl]- (9CI) (CA INDEX NAME)

L5 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

bis(2,2,3,3,4,4,4-heptafluorobutoxy)-2-thienyl]ethenyl]-5,5-dimethyl-2(5H)-thienylidene)- (9CI) (CA INDEX NAME)

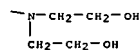


RN 765317-91-7 CAPLUS
CN Propanedinitrile, (4-[2-[5-[2-[5-[2-[4-(bis(2-hydroxyethyl)amino)phenyl]ethenyl]-3,4-bis(2,2,3,3,4,4,4-heptafluorobutoxy)-2-thienyl]ethenyl]-3,4-dibutoxy-2-thienyl]ethenyl]-3-cyano-5,5-dimethyl-2(5H)-furanlylidene)- (9CI) (CA INDEX NAME)



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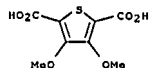


REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L5 ANSWER 5 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:609964 CAPLUS
DOCUMENT NUMBER: 141:140454
TITLE: Catalytic decarboxylation processes for preparing 3,4-alkylenedioxythiophenes and 3,4-alkylenedioxythiophenes and
3,4-dialkoxythiophenes
INVENTOR(S): Baik, Woon-Phil; Kim, Young-Sam; Hong, Hee-Jung; Jung,
Sang-Gook
PATENT ASSIGNEE(S): Myongji University, S. Korea
SOURCE: U.S. Pat. Appl. Publ., 5 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

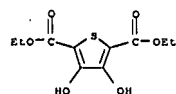
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-----------------------|------|----------|-----------------|------------|
| US 2004147765 | A1 | 20040729 | US 2003-715845 | 20031119 |
| US 7202369 | B2 | 20070410 | | |
| KR 2004043622 | A | 20040524 | KR 2002-71992 | 20021119 |
| PRIORITY APPL. INFO.: | | | KR 2002-71992 | A 20021119 |

OTHER SOURCE(S): CASREACT 141:140454; MARPAT 141:140454
AB A process for preparing 3,4-dialkoxythiophenes (e.g., 3,4-dimethoxythiophene)
or 3,4-alkylenedioxythiophenes (e.g., 3,4-ethylenedioxythiophene) in high yield via the rapid decarboxylation of 3,4-dialkoxythiophenedicarboxylic acid (e.g., 3,4-dimethoxy-2,5-thiophenedicarboxylic acid) or 3,4-alkylenedioxythiophenedicarboxylic acid in a water-miscible polar solvent in the presence of copper catalyst (e.g., copper powder) under an oxygen atmosphere is described.
IT 177364-96-4, 3,4-Dimethoxy-2,5-thiophenedicarboxylic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(catalytic decarboxylation processes for preparing 3,4-alkylenedioxythiophenes and 3,4-dialkoxythiophenes)
RN 177364-96-4 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)



IT 51792-34-8P, 3,4-Dimethoxythiophene
RL: SPN (Synthetic preparation); PREP (Preparation)
(catalytic decarboxylation processes for preparing 3,4-alkylenedioxythiophenes and 3,4-dialkoxythiophenes)
RN 51792-34-8 CAPLUS
CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)

L5 ANSWER 6 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:720296 CAPLUS
DOCUMENT NUMBER: 140:66665
TITLE: Electrolysis and spectroelectrochemical characterization of poly(3,4-dimethoxythiophene), poly(3,4-dipropoxythiophene) and poly(3,4-dioctyloxythiophene) films
AUTHOR(S): Skurlet, Artur; Palya, Barbara; Mieczkowski, Josef; Skompska, Magdalena
CORPORATE SOURCE: Department of Chemistry, Warsaw University, Warsaw, 02
SOURCE: 093, Pol.
Electrochimica Acta (2003), 48(24), 3665-3676
CODEN: ELCAAV; ISSN: 0013-4686
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Poly(3,4-dialkoxythiophene) films with different length of alkyl chain (1,3 and 8 C atoms) were obtained on Pt and ITO electrodes from the monomer solns. in MeCN by cyclic voltammetry (CV). The properties of the resulting films were studied by electrochem. methods, UV-visible, FTIR and NMR spectra. The CVs were correlated with differential cyclic voltabsorptograms (DCVA) recorded at the absorption maxima to explain the shape of the voltammograms of the polymers studied, dependent on the alkyl-chain length in alkoxy group. The presence of the zones of different crystallinity in the polymer film was postulated. Significant influence of the type of the solvent on asymmetry of the cyclic voltammograms for the polymer doping-undoping was discussed in terms of the solvent interaction with radical cation (polaron) delocalized on the alkoxy side groups. The polaron delocalization was proved by 1H-NMR spectra. Appearance of IR activated vibrations (IRAVs) in the range 1500-600 cm-1 and a characteristic electronic band at 3300 cm-1 at the polarization potential +0.25 V vs. Ag/Ag+ and their gradual changes upon further polymer oxidation were interpreted in terms of evolution of different charge carriers in lightly and heavily doped polymer.
IT 14282-56-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkylation of)
RN 14282-56-5 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, diethyl ester, disodium salt (8CI, 9CI) (CA INDEX NAME)

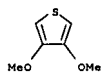


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IT 51792-34-8, 3,4-Dimethoxythiophene 484679-00-7,
3,4-Dipropoxythiophene

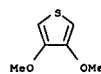
10538995.trn

L5 ANSWER 5 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

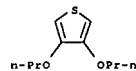


REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

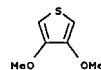
L5 ANSWER 6 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(electrochem. polymn. on platinum in acetonitrile contg. LiClO4)
RN 51792-34-8 CAPLUS
CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)



RN 484679-00-7 CAPLUS
CN Thiophene, 3,4-dipropoxy- (9CI) (CA INDEX NAME)

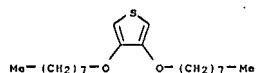


IT 121912-91-2P, Poly(3,4-dimethoxythiophene) 498581-42-3P
638189-44-3P
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)
(electrosynthesis and spectroelectrochem. characterization of films
of)
RN 121912-91-2 CAPLUS
CN Thiophene, 3,4-dimethoxy-, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 51792-34-8
CMF C6 H8 O2 S



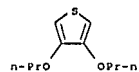
RN 498581-42-3 CAPLUS
CN Thiophene, 3,4-bis(octyloxy)-, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 207802-19-5
CMF C20 H36 O2 S

L5 ANSWER 6 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

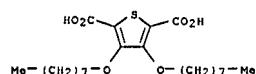


RN 638189-44-3 CAPLUS
CN Thiophene, 3,4-dipropoxy-, homopolymer (9CI) (CA INDEX NAME)

CM 1
CRN 484679-00-7
CMP C10 H16 O2 S



IT 334756-04-6
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(formation and decarboxylation in dioctyloxythiophene preparation)
RN 334756-04-6 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(octyloxy)- (9CI) (CA INDEX NAME)



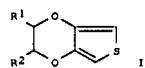
IT 638189-45-4
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(formation in alkylation of disodium di(ethoxycarbonyl)thiophenedithiolate in DMF using octyl iodide and hydrolysis of)
RN 638189-45-4 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(octyloxy)-, diethyl ester (9CI) (CA INDEX NAME)

L5 ANSWER 7 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:506554 CAPLUS
DOCUMENT NUMBER: 139:85358
TITLE: Process for the production of 5-alkyldioxeno[2,3-c]thiophenes from the transesterificative cyclocondensation reaction of 3,4-dialkoxythiophenes with geminal alkanediols
Reuter, Knud
INVENTOR(S): Bayer AG, Germany
PATENT ASSIGNEE(S): Ger. Offen., 8 pp.
SOURCE: CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|------------|
| DE 10162746 | A1 | 20030703 | DE 2001-10162746 | 20011220 |
| BE 1015256 | A6 | 20041207 | BE 2002-735 | 20021218 |
| PRIORITY APPLN. INFO.: | | | DE 2001-10162746 | A 20011220 |

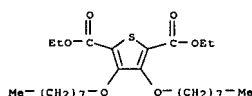
OTHER SOURCE(S): CASREACT 139:85358; MARPAT 139:85358
GI



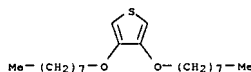
AB 5-Alkyldioxeno[2,3-c]thiophenes [I; R1 = (un)branched (un)substituted C1-20 alkyl; R2 = H, (un)branched (un)substituted C1-20 alkyl; R1R2 = alkylene] are prepared in high yield and selectivity by the transesterificative cyclocondensation reaction of 3,4-dialkoxythiophenes (II; R = C1-4 alkyl) with geminal alkanediols RICH(OH)CH(OH)R2 in the presence of an acid catalyst. Thus, 1,2-hexadecanediol was reacted with 3,4-bis(propoxy)thiophene in the presence of p-toluenesulfonic acid, producing 5-tetradecyldioxeno[2,3-c]thiophene (m.p. 32°) in 67.2% theor. yield.

IT 58416-04-9P, Dimethyl 3,4-dihydroxy-2,5-thiophenedicarboxylate
552857-02-0P 552857-03-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(process for the production of 3,4-dialkoxythiophenes from)
RN 58416-04-9 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, dimethyl ester (6CI, 9CI) (CA INDEX NAME)

L5 ANSWER 6 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

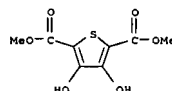


IT 207802-19-5P, 3,4-Dioctyloxythiophene
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and electrochem. polymerization on platinum in acetonitrile containing LiClO4)
RN 207802-19-5 CAPLUS
CN Thiophene, 3,4-bis(octyloxy)- (9CI) (CA INDEX NAME)

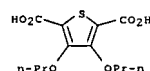


REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

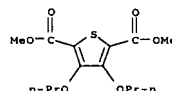
L5 ANSWER 7 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



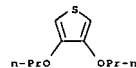
RN 552857-02-0 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dipropoxy- (9CI) (CA INDEX NAME)



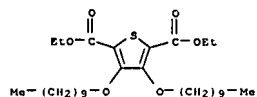
RN 552857-03-1 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dipropoxy-, dimethyl ester (9CI) (CA INDEX NAME)



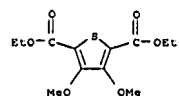
IT 484679-00-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(process for the production of 5-alkyldioxeno[2,3-c]thiophenes from the transesterificative cyclocondensation reaction of 3,4-dialkoxythiophenes with geminal alkanediols)
RN 484679-00-7 CAPLUS
CN Thiophene, 3,4-dipropoxy- (9CI) (CA INDEX NAME)



L5 ANSWER 8 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2002:881499 CAPLUS
 DOCUMENT NUMBER: 139:230513
 TITLE: Product class 10: thiophenes, thiophene 1,1-dioxides, and thiophene 1-oxides
 AUTHOR(S): Schatz, J.
 CORPORATE SOURCE: Abt. Organische Chemie I, Universitaet Ulm, Ulm, 89081, Germany
 SOURCE: Science of Synthesis (2002), 9, 287-422
 CODEN: SSCYJ9
 PUBLISHER: Georg Thieme Verlag
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English
 AB A review describing methods for preparing thiophenes, thiophene 1,1-dioxides, and thiophene 1-oxides.
 IT 153846-91-4 177364-92-0 177364-93-1
 177364-95-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of thiophene, thiophene dioxide, and thiophene oxide deriva.)
 RN 153846-91-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)-, diethyl ester (9CI) (CA INDEX NAME)

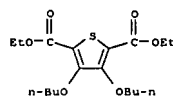


RN 177364-92-0 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy-, diethyl ester (9CI) (CA INDEX NAME)

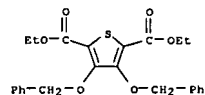


RN 177364-93-1 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dibutoxy-, diethyl ester (9CI) (CA INDEX NAME)

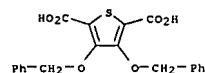
L5 ANSWER 8 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



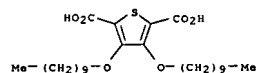
RN 177364-95-3 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(phenylmethoxy)-, diethyl ester (9CI) (CA INDEX NAME)



IT 38321-97-0P 143084-55-3P 177364-96-4P
 177364-97-5P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of thiophene, thiophene dioxide, and thiophene oxide deriva.)
 RN 38321-97-0 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(phenylmethoxy)- (9CI) (CA INDEX NAME)

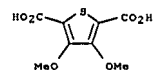


RN 143084-55-3 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)

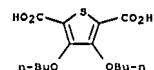


RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)

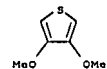
L5 ANSWER 8 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



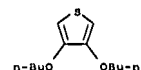
RN 177364-97-5 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dibutoxy- (9CI) (CA INDEX NAME)



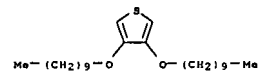
IT 51792-34-8P 126673-34-5P 156112-75-3P
 177364-99-7P 595565-18-7P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of thiophene, thiophene dioxide, and thiophene oxide deriva.)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)



RN 126673-34-5 CAPLUS
 CN Thiophene, 3,4-dibutoxy- (9CI) (CA INDEX NAME)



RN 156112-75-3 CAPLUS
 CN Thiophene, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)

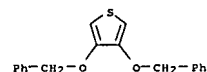


RN 177364-99-7 CAPLUS

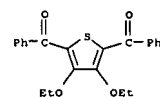
10538995.trn

L5 ANSWER 8 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

CN Thiophene, 3,4-bis(phenylmethoxy)- (9CI) (CA INDEX NAME)



RN 595565-18-7 CAPLUS
 CN Methanone, (3,4-diethoxy-2,5-thiophenediyl)bis[phenyl- (9CI) (CA INDEX NAME)

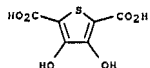


REFERENCE COUNT: 1180 THERE ARE 1180 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

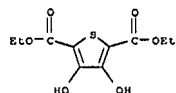
L5 ANSWER 9 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2002:867225 CAPLUS
 DOCUMENT NUMBER: 137:377495
 TITLE: Photothermographic material and image formation for reducing stain after continuous development
 INVENTOR(S): Kudo, Shinji
 PATENT ASSIGNEE(S): Konica Co., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 51 pp.
 CODEM: JKKXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| JP 2002328443 | A | 20021115 | JP 2001-131660 | 20010427 |
| PRIORITY APPLN. INFO.: JP 2001-131660 20010427 | | | | |

AB The material has at least (a) a photosensitive layer containing at least an organic Ag salt, a photosensitive Ag halide, a reducing agent, and a binder with 80-110° glass transition temperature and (b) an elec. conducting layer (A) containing a metal oxide or a conductive polymer, in which a surfactant 530 mg/m² is contained in the layer A side. It is exposed for image formation by a scanner with longitudinal multimode laser beams in their controlled distribution.
 IT 14282-58-7D, esters
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of diethylenedioxythiophene)
 RN 14282-58-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (8CI, 9CI) (CA INDEX NAME)

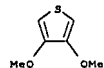


L5 ANSWER 10 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

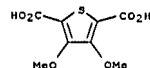


● 2 Na

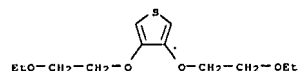
IT 51792-34-8P 177364-96-4P 403700-05-0P
 403700-09-4P 403700-14-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (Mannich reaction of dialkoxythiophene compds. with secondary amines)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)



RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)



RN 403700-05-0 CAPLUS
 CN Thiophene, 3,4-bis(2-ethoxyethoxy)- (9CI) (CA INDEX NAME)



RN 403700-09-4 CAPLUS
 CN Piperidine, 1-[(3,4-dimethoxy-2-thienyl)methyl]- (9CI) (CA INDEX NAME)

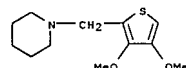
L5 ANSWER 10 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2001:896739 CAPLUS
 DOCUMENT NUMBER: 136:232211
 TITLE: Optimization of substitution at the 2- and 5-positions

of 3,4-dialkoxythiophenes via the Mannich reaction: the influences of steric crowding, electrophile reactivity and temperature
 Halfpenny, Joan; Rooney, Phillip B.; Sloman, Zachary S.
 CORPORATE SOURCE: Department of Chemistry and Physics, The Nottingham Trent University, Nottingham, NG11 8NS, UK
 SOURCE: Journal of the Chemical Society, Perkin Transactions 1

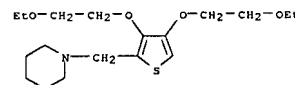
(2001), (20), 2595-2603
 CODEN: JCSPEC; ISSN: 1472-7781
 PUBLISHER: Royal Society of Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 136:232211

AB A number of 3,4-dialkoxythiophene compds. have been synthesized and their reactivities assessed via the Mannich reaction with secondary amines. These reactions surprisingly gave the bis-Mannich bases substituted at the 2- and 5-positions as well as the expected mono-Mannich bases substituted at the 2-position. Conditions were optimized to give sym. bis-2,5-Mannich bases in one step and asym. bis-2,5-Mannich bases in two steps. Several bis(thien-2-ylmethyl)amines derived from 3,4-dialkoxythiophenes are reported, their synthesis being performed under both normal and high dilution conditions. Some syntheses also afforded the (thien-2-ylmethyl)amine oligomers. Further substitution of the bis(thien-2-ylmethyl)amines at the 5-position via the Mannich reaction also proved successful. The factors affecting the yields and substitution patterns are discussed, together with mol. modeling of the spatial requirements.
 IT 14282-56-5
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (Mannich reaction of dialkoxythiophene compds. with secondary amines)
 RN 14282-56-5 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, diethyl ester, disodium salt (8CI, 9CI) (CA INDEX NAME)

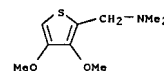
L5 ANSWER 10 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



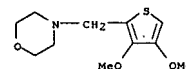
RN 403700-14-1 CAPLUS
 CN Piperidine, 1-[(3,4-bis(2-ethoxyethoxy)-2-thienyl)methyl]- (9CI) (CA INDEX NAME)



IT 403700-08-3P 403700-10-7P 403700-13-0P
 403700-15-2P 403700-17-4P 403700-18-5P
 403700-21-0P 403700-22-1P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (Mannich reaction of dialkoxythiophene compds. with secondary amines)
 RN 403700-08-3 CAPLUS
 CN 2-Thiophenemethanamine, 3,4-dimethoxy-N,N-dimethyl- (9CI) (CA INDEX NAME)

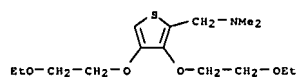


RN 403700-10-7 CAPLUS
 CN Morpholine, 4-[(3,4-dimethoxy-2-thienyl)methyl]- (9CI) (CA INDEX NAME)

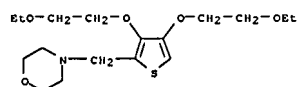


RN 403700-13-0 CAPLUS
 CN 2-Thiophenemethanamine, 3,4-bis(2-ethoxyethoxy)-N,N-dimethyl- (9CI) (CA INDEX NAME)

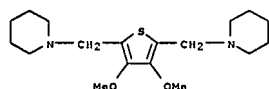
L5 ANSWER 10 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



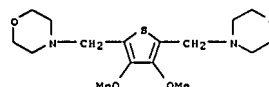
RN 403700-15-2 CAPLUS
CN Morpholine, 4-[[3,4-bis(2-ethoxyethoxy)-2-thienyl]methyl]- (9CI) (CA INDEX NAME)



RN 403700-17-4 CAPLUS
CN Piperidine, 1,1'-[[3,4-dimethoxy-2,5-thiophenediyl]bis(methylene)]bis- (9CI) (CA INDEX NAME)



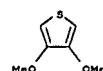
RN 403700-18-5 CAPLUS
CN Morpholine, 4,4'-[[3,4-dimethoxy-2,5-thiophenediyl]bis(methylene)]bis- (9CI) (CA INDEX NAME)



RN 403700-21-0 CAPLUS
CN Piperidine, 1,1'-[[3,4-bis(2-ethoxyethoxy)-2,5-thiophenediyl]bis(methylene)]bis- (9CI) (CA INDEX NAME)

L5 ANSWER 11 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

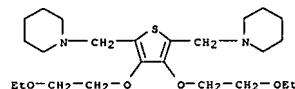
ACCESSION NUMBER: 2001:749864 CAPLUS
DOCUMENT NUMBER: 136:86167
TITLE: Revisiting the electropolymerization of 3,4-dimethoxythiophene in organic and micellar media
AUTHOR(S): Fall, M.; Assogba, L.; Aaron, J.-J.; Dieng, M. M.
CORPORATE SOURCE: Departement de Chimie, Universite C.A.D., Faculte des Sciences et Techniques, Senegal, Dakar, Fr.
SOURCE: Synthetic Metals (2001), 123(3), 365-372
CODEN: SYMEDI; ISSN: 0379-6779
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Poly(3,4-dimethoxythiophene) (PDMOT) was prepared by electrochem. polymerization of 3,4-dimethoxythiophene in acetonitrile and aqueous anionic sodium dodecylsulfate micellar medium with LiClO₄ as supporting electrolyte, by voltammetric and potentiostatic techniques. Two distinct mechanisms were found: PDMOT films prepared in acetonitrile were thick, electroactive, and not soluble in organic media, whereas those obtained in the micellar medium were thin and soluble in organic media. PDMOT was characterized by cyclic voltammetry, electronic absorption and fluorescence spectroscopy, IR, and MALDI-TOF mass spectrometry. PDMOT electrodeposited in the micellar medium is constituted of short-chain oligomers. The difference on PDMOT characteristics depending on preparation medium is assigned to inhibition of the electrochem. polymerization reaction in the micellar solution, resulting from charge delocalization of radical-cations and diradical-dications towards the methoxy groups.
IT 121912-91-2P, Poly(3,4-dimethoxythiophene)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (electrochem. polymerization of prepared dimethoxythiophene in acetonitrile and micellar media and morphol. and electroactivity of prepared poly(dimethoxythiophene))
RN 121912-91-2 CAPLUS
CN Thiophene, 3,4-dimethoxy-, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 51792-34-0
CMF C6 H8 O2 S



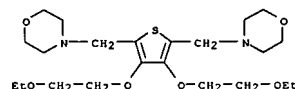
IT 58416-04-9P, 3,4-Dihydroxy-2,5-dicarboxythiophene dimethyl ester
108199-25-3P, 3,4-Dioxy-2,5-dicarboxythiophene dimethyl ester
disodium salt 118851-98-2P, 3,4-Dimethoxy-2,5-dicarboxythiophene dimethyl ester 177364-96-4P, 3,4-Dimethoxythiophene 2,5-dicarboxylic acid 386702-88-1P, 3,4-Dihydroxy-2,5-dicarboxythiophene dimethyl ester dipotassium salt

10538995.trn

L5 ANSWER 10 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



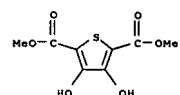
RN 403700-22-1 CAPLUS
CN Morpholine, 4,4'-[[3,4-bis(2-ethoxyethoxy)-2,5-thiophenediyl]bis(methylene)]bis- (9CI) (CA INDEX NAME)



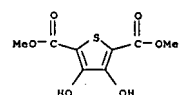
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L5 ANSWER 11 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (intermediate; electrochem. polymn. of prepd. dimethoxythiophene in acetonitrile and micellar media and morphol. and electroactivity of prepd. poly(dimethoxythiophene))
RN 58416-04-9 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, dimethyl ester (6CI, 9CI) (CA INDEX NAME)

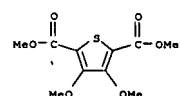


RN 108199-25-3 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, 2,5-dimethyl ester, sodium salt (1:2) (CA INDEX NAME)



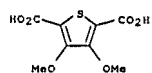
● 2 Na

RN 118851-98-2 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy-, dimethyl ester (9CI) (CA INDEX NAME)

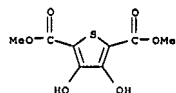


RN 177364-96-4 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)

L5 ANSWER 11 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

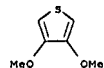


RN 386702-88-1 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, dimethyl ester, dipotassium salt (9CI) (CA INDEX NAME)



● 2 K

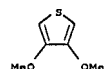
IT 51792-34-8P, 3,4-Dimethoxythiophene
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (monomer; electrochem. polymerization of prepared dimethoxythiophene in acetonitrile and micellar media and morphol. and electroactivity of prepared poly(dimethoxythiophene))
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)



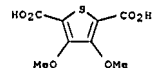
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS
 FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L5 ANSWER 12 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

RL: IMP (Industrial manufacture); PREP (Preparation)
 (prepn. of dialkoxythiophenes and alkylendioxythiophenes by decarboxylation of thiophenedicarboxylic acid precursors)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)



IT 177364-96-4
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of dialkoxythiophenes and alkylendioxythiophenes by decarboxylation of thiophenedicarboxylic acid precursors)
 RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)



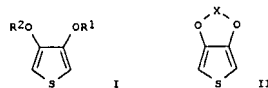
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS
 FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L5 ANSWER 12 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:747165 CAPLUS
 DOCUMENT NUMBER: 135:289187
 TITLE: Preparation of dialkoxythiophenes and alkylendioxythiophenes
 INVENTOR(S): Rauchschwalbe, Guenter; Jonas, Friedrich
 PATENT ASSIGNEE(S): Bayer A.-G., Germany
 SOURCE: Eur. Pat. Appl., 10 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|------------------|----------|
| EP 1142888 | A1 | 20011010 | EP 2001-106444 | 20010323 |
| EP 1142888 | B1 | 20040908 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| DE 10016723 | A1 | 20011011 | DE 2000-10016723 | 20000404 |
| US 2001034453 | A1 | 20011025 | US 2001-813875 | 20010321 |
| US 6369239 | B2 | 20020409 | | |
| AT 275555 | T | 20040915 | AT 2001-106444 | 20010323 |
| ES 2228680 | T3 | 20050416 | ES 2001-1106444 | 20010328 |
| JP 200128182 | A | 20011016 | JP 2001-92829 | 20010328 |
| PRIORITY APPLN. INFO.: DE 2000-10016723 A 20000404 | | | | |

OTHER SOURCE(S): MARPAT 135:289187
 GI

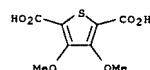


AB Dialkoxythiophenes (I; R1, R2 = C1-15 alkyl) and alkylendioxythiophenes (II; X = (un)substituted (CH2)n; n = 1-12), useful as monomers for elec. conductive polymers, are manufactured by decarboxylation of 3,4-dialkoxy- resp. 3,4-dialkylendioxy-2,5-thiophenedicarboxylic acids in the presence of solvents or diluents which have b.p.s. higher than decarboxylated products and are not aromatic amines, and optionally, heavy metal salt catalysts. The products are separated by distillation. For example, heating a mixture of 450 g di-Bu phthalate and 240 g 3,4-ethylenedioxythiophene-2,5-dicarboxylic acid to 150° in vacuo (.apprx.30 mbar) and removing H2O by distillation, heating the residue for 24 h at 240° under N until CO2 evolution ceased and distilling the product at 0.1 mbar gave 118 g 3,4-ethylenedioxythiophene.
 IT 51792-34-8P, 3,4-Dimethoxythiophene

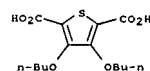
L5 ANSWER 13 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:94657 CAPLUS
 DOCUMENT NUMBER: 134:296193
 TITLE: The synthesis and characterization of fluorescent poly(heteroaromatic oxadiazole)s
 AUTHOR(S): Ng, S. C.; Ding, M.; Chan, H. S. O.; Yu, W.-L.
 CORPORATE SOURCE: Department of Chemistry, National University of Singapore, Singapore, 119260, Singapore
 SOURCE: Macromolecular Chemistry and Physics (2001), 202(1), 8-13
 CODEN: MCHPES; ISSN: 1022-1352
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Five polymers comprising alternating electron-donating thiophene and electron-withdrawing oxadiazole units were synthesized by polycondensation of substituted thiophenes and hydrazine hydrate, followed by dehydrative cyclization to obtain the thiophene-oxadiazole sequence. The optical and charge transport properties of the poly(thiophene oxadiazole)s were studied by UV-Vis absorption spectroscopy, fluorescence emission spectroscopy, and cyclic voltammetry. All the products showed good thermal stability; the presence of electron donating groups at the 3 position caused a decrease in thermal stability vs. the unsubstituted polythiophene-oxadiazole. All polymers depicted blue fluorescence and high fluorescence quantum efficiency. The electron-donating alkoxy group at 3- and 4-positions of the thiophene ring and the length of the alkoxy side chain also affected the fluorescence quantum yield.
 IT 177364-96-4P, 3,4-Dimethoxy-2,5-dicarboxythiophene
 177364-97-5P, 3,4-Dibutoxy-2,5-dicarboxythiophene
 334756-04-6P, 3,4-Dioctyloxy-2,5-dicarboxythiophene
 334756-05-7P, 3,4-Didodecyloxy-2,5-dicarboxythiophene
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and thermal stability and carrier transport of blue fluorescent poly(thiophene oxadiazole) conjugated polymers)
 RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)

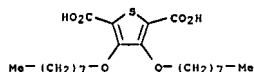


RN 177364-97-5 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dibutoxy- (9CI) (CA INDEX NAME)

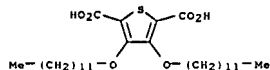


RN 334756-04-6 CAPLUS

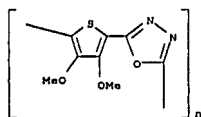
L5 ANSWER 13 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(octyloxy)- (9CI) (CA INDEX NAME)



RN 334756-05-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(dodecyloxy)- (9CI) (CA INDEX NAME)



IT 334756-14-8P 334756-15-9P 334756-16-0P
 334756-17-1P
 RL: PREP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (preparation and thermal stability and carrier transport of blue
 fluorescent
 poly(thiophene oxadiazole) conjugated polymers)
 RN 334756-14-8 CAPLUS
 CN Poly[1,3,4-oxadiazole-2,5-diyl(3,4-dimethoxy-2,5-thiophenediyl)] (9CI)
 (CA INDEX NAME)

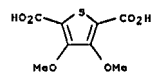


RN 334756-15-9 CAPLUS
 CN Poly[1,3,4-oxadiazole-2,5-diyl(3,4-dibutoxy-2,5-thiophenediyl)] (9CI)
 (CA INDEX NAME)

L5 ANSWER 13 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
 (prepn. and thermal stability and carrier transport of blue
 fluorescent
 poly(thiophene oxadiazole) conjugated polymers)
 RN 334756-06-8 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy-, polymer with hydrazine
 (9CI) (CA INDEX NAME)

CM 1

CRN 177364-96-4
 CMF C8 H8 O6 S

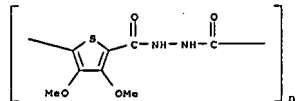


CM 2

CRN 302-01-2
 CMF H4 N2

H₂N=NH₂

RN 334756-07-9 CAPLUS
 CN Poly[1,3,4-dimethoxy-2,5-thiophenediyl]carbonylhydrazocarbonyl] (9CI) (CA INDEX NAME)

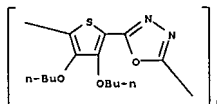


RN 334756-08-0 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dibutoxy-, polymer with hydrazine
 (9CI) (CA INDEX NAME)

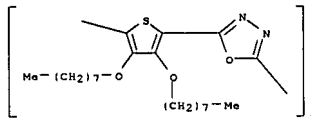
CM 1

CRN 177364-97-5
 CMF C14 H20 O6 S

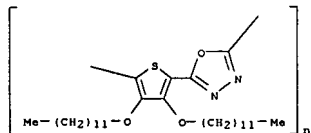
L5 ANSWER 13 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



RN 334756-16-0 CAPLUS
 CN Poly[1,3,4-oxadiazole-2,5-diyl(3,4-bis(octyloxy)-2,5-thiophenediyl)]
 (9CI) (CA INDEX NAME)

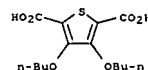


RN 334756-17-1 CAPLUS
 CN Poly[1,3,4-oxadiazole-2,5-diyl(3,4-bis(dodecyloxy)-2,5-thiophenediyl)]
 (9CI) (CA INDEX NAME)



IT 334756-06-8P, 3,4-Dimethoxy-2,5-dicarboxythiophene-hydrazine
 hydrate copolymer 334756-07-9P, 3,4-Dimethoxy-2,5-
 dicarboxythiophene-hydrazine hydrate copolymer, SRU 334756-08-0P
 , 3,4-Dibutoxy-2,5-dicarboxythiophene-hydrazine hydrate copolymer
 334756-09-1P, 3,4-Dibutoxy-2,5-dicarboxythiophene-hydrazine
 hydrate copolymer, SRU 334756-10-4P, 3,4-Dioctyloxy-2,5-
 dicarboxythiophene-hydrazine hydrate copolymer 334756-11-5P,
 3,4-Dioctyloxy-2,5-dicarboxythiophene-hydrazine hydrate copolymer, SRU
 334756-12-6P, 3,4-Didodecyloxy-2,5-dicarboxythiophene-hydrazine
 hydrate copolymer 334756-13-7P, 3,4-Didodecyloxy-2,5-
 dicarboxythiophene-hydrazine hydrate copolymer, SRU
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)

L5 ANSWER 13 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

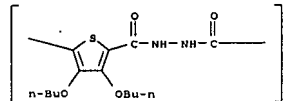


CM 2

CRN 302-01-2
 CMF H4 N2

H₂N=NH₂

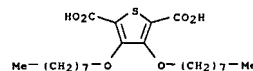
RN 334756-09-1 CAPLUS
 CN Poly[1,3,4-dibutoxy-2,5-thiophenediyl]carbonylhydrazocarbonyl] (9CI) (CA INDEX NAME)



RN 334756-10-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(octyloxy)-, polymer with
 hydrazine
 (9CI) (CA INDEX NAME)

CM 1

CRN 334756-04-6
 CMF C22 H36 O6 S



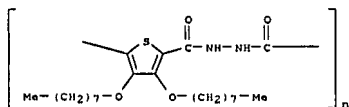
CM 2

CRN 302-01-2
 CMF H4 N2

H₂N=NH₂

L5 ANSWER 13 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

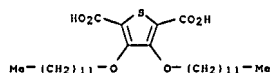
RN 334756-11-5 CAPLUS
 CN Poly[[3,4-bis(octyloxy)-2,5-thiophenediyl]carbonylhydrazocarbonyl] (9CI)
 (CA INDEX NAME)



RN 334756-12-6 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(dodecyloxy)-, polymer with hydrazine (9CI) (CA INDEX NAME)

CM 1

CRN 334756-05-7
 CMF C30 H52 O6 S



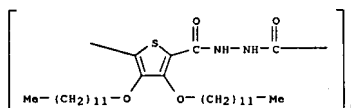
CM 2

CRN 302-01-2
 CMF H4 H2

H2N=NH2

RN 334756-13-7 CAPLUS
 CN Poly[[3,4-bis(dodecyloxy)-2,5-thiophenediyl]carbonylhydrazocarbonyl]
 (9CI)
 (CA INDEX NAME)

L5 ANSWER 13 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L5 ANSWER 14 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:535397 CAPLUS
 DOCUMENT NUMBER: 133:122801
 TITLE: Single component sulfur-based cathodes for lithium and lithium-ion batteries
 INVENTOR(S): Pope, John; Buttry, Dan; White, Shannon; Corcoran, Robert
 PATENT ASSIGNEE(S): Blue Sky Batteries, Inc., USA
 SOURCE: PCT Int. Appl., 48 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|-------------|
| WO 2000045451 | A1 | 20000803 | WO 2000-US2445 | 20000131 |
| W: JP, US | | | | |
| RN: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| EP 1179220 | A2 | 20020213 | EP 2000-907101 | 20000131 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| US 6869729 | B1 | 20050322 | US 2002-890529 | 20020405 |
| US 2006073386 | A1 | 20060406 | US 2005-85234 | 20050322 |
| PRIORITY APPLN. INFO.: | | | US 1999-118068P | P 19990201 |
| | | | WO 2000-US2445 | W 20000131 |
| | | | US 2002-890529 | A1 20020405 |

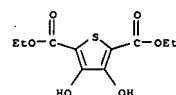
AB The cathode materials of concern are the conducting polymer or backbone and the redox active species or sulfur species. The selection of the materials is based on the characteristics of the materials relating to the other components of the batteries and to each other. The present invention also pertains to the resultant cathode materials, particularly

a selected cathode material of a single component sulfur-based conducting polymer with the sulfur species covalently linked to the conducting polymer, and most particularly a thiophene based polymer with covalently linked sulfur species. The conducting polymers have been covalently-derivatized with sulfides and/or sulfide-containing groups as battery cathode materials. The present invention also pertains to a battery employing the selection method and resultant cathode materials.

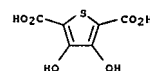
IT 1822-66-8P, 2,5-Dicarbethoxy-3,4-dihydroxythiophene
 14282-58-7P 14282-59-8P, 3,4-Thiophenediol
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (single component sulfur-based cathodes for lithium and lithium-ion batteries)

RN 1822-66-8 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, 2,5-diethyl ester (CA INDEX NAME)

L5 ANSWER 14 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



RN 14282-58-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (8CI, 9CI) (CA INDEX NAME)



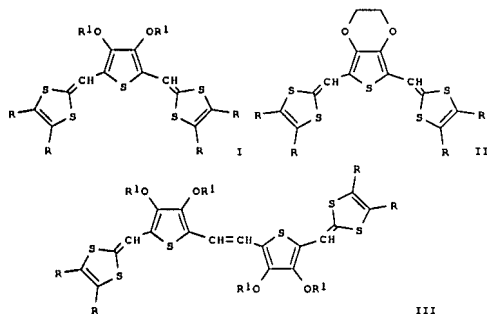
RN 14282-59-8 CAPLUS
 CN 3,4-Thiophenediol (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS

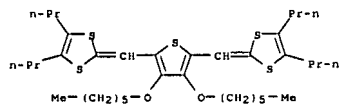
FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L5 ANSWER 16 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1999:304427 CAPLUS
 DOCUMENT NUMBER: 131:102221
 TITLE: Low oxidation potential tetrathiafulvalene analogs based on 3,4-dialkoxythiophene π -conjugating spacers
 AUTHOR(S): Akoudad, Said; Frere, Pierre; Mercier, Nicolas; Roncalli, Jean
 CORPORATE SOURCE: Ingenierie Moléculaire et Matériaux Organiques CNRS UMR 6501, Université d'Angers, Angers, 49045, Fr.
 SOURCE: Journal of Organic Chemistry (1999), 64(12), 4267-4272
 CODEN: JOCEAH; ISSN: 0022-3263
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 GI

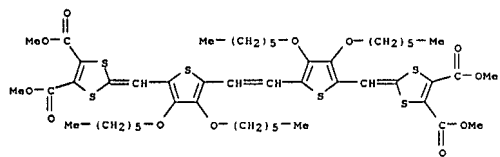


AB Tetrathiafulvalene analogs involving dihexyloxythiophene I, ethylenedioxythiophene II, and bis(3,4-dihexyloxy-2-thienyl)ethylene III (R = CO₂Me, SMe, n-Pr; R1 = hexyl) as conjugating spacer and diversely substituted at the 1,3-dithiole ring have been synthesized. Electronic absorption spectra show the expected decrease of HOMO-LUMO gap when increasing the electron-releasing power of R or the length of the conjugating spacer. Cyclic voltammetry (CV) shows that whereas compds. I and II are reversibly oxidized into their cation radical and dication through two one-electron steps, for compds. III the dication is formed directly via a two-electron transfer. Comparison of the data for compds. II and III with those of their resp. analogs based on thiophene and dithienylethylene shows that introduction of the electron-donating alkoxy

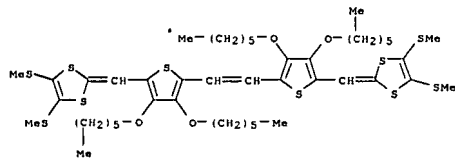
L5 ANSWER 16 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



RN 230949-83-4 CAPLUS
 CN 1,3-Dithiole-4,5-dicarboxylic acid, 2,2'-[1,2-ethenediylbis[[3,4-bis(hexyloxy)-5,2-thiophenediyl]methylidene]]bis-, tetramethyl ester (9CI)
 (CA INDEX NAME)

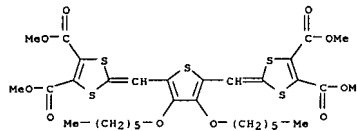


RN 230949-84-5 CAPLUS
 CN 1,3-Dithiole, 2,2'-[1,2-ethenediylbis[[3,4-bis(hexyloxy)-5,2-thiophenediyl]methylidene]]bis[[4,5-bis(methylthio)- (9CI) (CA INDEX NAME)

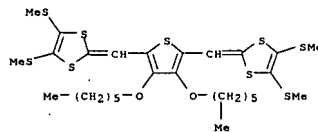


RN 230949-85-6 CAPLUS
 CN 1,3-Dithiole, 2,2'-[1,2-ethenediylbis[[3,4-bis(hexyloxy)-5,2-thiophenediyl]methylidene]]bis[[4,5-dipropyl- (9CI) (CA INDEX NAME)

L5 ANSWER 16 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
 groups at the 3 and 4 positions of the thiophene ring produces a 150-200 mV neg. shift of the first redox potential (E¹). On the other hand, CV data for compds. I and II reveal several unusual features such as
 Aa E¹ = 0.10 V/SCE ranking among the lowest known to date and a Coulombic repulsion between pos. charges in the dication larger than for the analog π -donors based on unsubstituted thiophene. These results are interpreted by a major reorganization of the electronic distribution in the donor mol. due to alkoxy groups: the highest electron d. moving from the 1,3-dithiole moiety toward the central thiophene ring.
 IT 230949-77-6P 230949-78-7P 230949-79-8P 230949-83-4P 230949-84-5P 230949-85-6P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation, cyclic voltammetry, and absorption spectra of tetrathiafulvalenes with dialkoxythiophene spacers)
 RN 230949-77-6 CAPLUS
 CN 1,3-Dithiole-4,5-dicarboxylic acid, 2,2'-[[3,4-bis(hexyloxy)-2,5-thiophenediyl]dimethylidene]bis-, tetramethyl ester (9CI) (CA INDEX NAME)

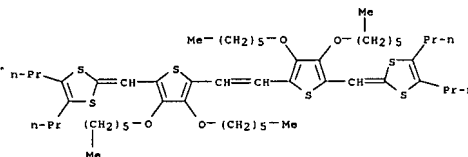


RN 230949-78-7 CAPLUS
 CN 1,3-Dithiole, 2,2'-[[3,4-bis(hexyloxy)-2,5-thiophenediyl]dimethylidene]bis[[4,5-bis(methylthio)- (9CI) (CA INDEX NAME)



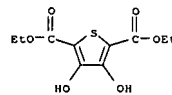
RN 230949-79-8 CAPLUS
 CN 1,3-Dithiole, 2,2'-[[3,4-bis(hexyloxy)-2,5-thiophenediyl]dimethylidene]bis[[4,5-dipropyl- (9CI) (CA INDEX NAME)

L5 ANSWER 16 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



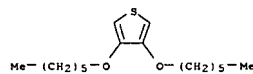
IT 1822-66-8
 RL: RCT (Reactant); RACT (Reactant or reagent) (preparation, cyclic voltammetry, and absorption spectra of tetrathiafulvalenes with dialkoxythiophene spacers)

RN 1822-66-8 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, 2,5-diethyl ester (CA INDEX NAME)



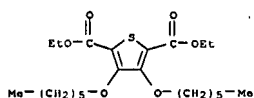
IT 211235-81-3P 230949-86-7P 230949-87-8P 230949-88-9P 230949-89-0P 230949-90-3P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (preparation, cyclic voltammetry, and absorption spectra of tetrathiafulvalenes with dialkoxythiophene spacers)

RN 211235-81-3 CAPLUS
 CN Thiophene, 3,4-bis(hexyloxy)- (9CI) (CA INDEX NAME)

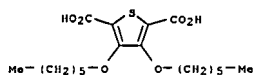


RN 230949-86-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(hexyloxy)-, diethyl ester (9CI) (CA INDEX NAME)

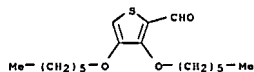
L5 ANSWER 16 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



RN 230949-87-8 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(hexyloxy)- (9CI) (CA INDEX NAME)

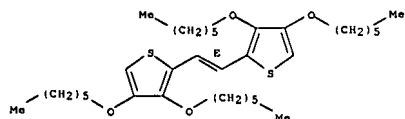


RN 230949-88-9 CAPLUS
CN 2-Thiophenecarboxaldehyde, 3,4-bis(hexyloxy)- (9CI) (CA INDEX NAME)



RN 230949-89-0 CAPLUS
CN Thiophene, 2,2'-(1E)-1,2-ethenediylbis[3,4-bis(hexyloxy)- (9CI) (CA INDEX NAME)]

Double bond geometry as shown.



RN 230949-90-3 CAPLUS
CN 2-Thiophenecarboxaldehyde, 5,5'-(1E)-1,2-ethenediylbis[3,4-bis(hexyloxy)- (9CI) (CA INDEX NAME)]

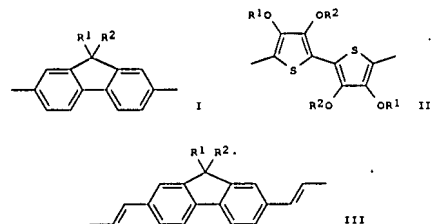
Double bond geometry as shown.

L5 ANSWER 17 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:45212 CAPLUS
DOCUMENT NUMBER: 130:111508
TITLE: Symmetrical dyes with large two-photon absorption cross-sections
INVENTOR(S): Reinhardt, Bruce A.; Kannan, Ramamurthi; Brott, Lawrence L.; Clarkson, Stephen J.
PATENT ASSIGNER(S): United States Dept. of the Air Force, USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| US 5859251 | A | 19990112 | US 1997-932529 | 19970918 |
| PRIORITY APPLN. INFO.: | | | US 1997-932529 | 19970918 |

OTHER SOURCE(S): MARPAT 130:111508
CI



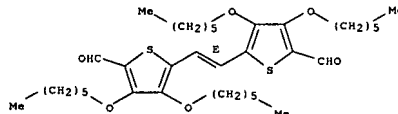
AB A two-photon absorbing chromophore of the formula EArE (Ar = I, II, III; R1, R2 = C8-12 alkyl; E = 2-thienyl, benzothiazol-2-yl, 4-pyridyl) are synthesized and are useful in laser-scanning confocal fluorescent microscopy. Thus fluorene was treated with BuLi and then decyl bromide and brominated to give 2,7-dibromo-9,9-didecylfluorene, which was reacted with 2-(tributylstannyl)thiophene to give 2,7-bis(2-thienyl)-9,9-didecylfluorene. A 0.0418 M solution of the above compound in THF had a 2-photon absorption coefficient 0.058 ± 10^{-20} cm/GW and two-photon cross-section 0.230 cm²/GW.

IT 197969-53-2P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of sym. dyes with large two-photon absorption cross-sections)

RN 197969-53-2 CAPLUS
CN Benzothiazole, 2,2'-(1E)-[3,3',4,4'-tetrakis(decyloxy)](2,2'-bithiophene)-5,5'-diylbis- (9CI) (CA INDEX NAME)

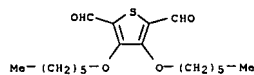
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L5 ANSWER 16 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



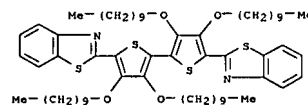
IT 211235-84-6P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation, cyclic voltammetry, and absorption spectra of tetrathiafulvalenes with dialkoxythiophene spacers)

RN 211235-84-6 CAPLUS
CN 2,5-Thiophenedicarboxaldehyde, 3,4-bis(hexyloxy)- (9CI) (CA INDEX NAME)

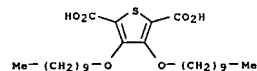


REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

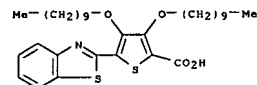
L5 ANSWER 17 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



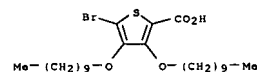
IT 143084-55-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of sym. dyes with large two-photon absorption cross-sections)
RN 143084-55-3 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



IT 143084-56-4P 219548-41-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of sym. dyes with large two-photon absorption cross-sections)
RN 143084-56-4 CAPLUS
CN 2-Thiophenecarboxylic acid, 5-(2-benzothiazolyl)-3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



RN 219548-41-1 CAPLUS
CN 2-Thiophenecarboxylic acid, 5-bromo-3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)

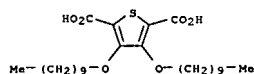


REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 17 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

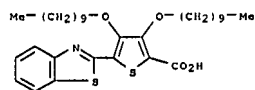
L5 ANSWER 18 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:411176 CAPLUS
 DOCUMENT NUMBER: 129:96579
 TITLE: Highly active two-photon dyes: design, synthesis, and characterization toward application
 AUTHOR(S): Reinhardt, Bruce A.; Brott, Lawrence L.; Carlson, Stephen J.; Dillard, Ann G.; Bharti, Jayprakash C.; Kannan, Ramasurthi; Yuen, Lixiang; He, Guang S.; Prasad, Paras N.
 CORPORATE SOURCE: Polymer Branch WL/MLBP Materials Directorate, U. S. Air Force Research Laboratory, Wright-Patterson AFB, OH, 45433-7750, USA
 SOURCE: Chemistry of Materials (1998), 10(7), 1863-1874
 CODEN: CHATEX; ISSN: 0897-4756
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A series of compds. with systematically varied mol. structures which exhibit very large effective two-photon cross sections has been synthesized and characterized in solution using a nonlinear transmission technique. The general structure of these compds. can be categorized into two basic structural families: acceptor/donor/donor/acceptor and donor/bridge/acceptor. This study attempts to determine certain mol. structure/effective two-photon absorption relationships by careful characterization and as a function of systematically varied changes in the organic structure of the dye mols. Such information can be useful in the design of more efficient two-photon dyes for imaging and power-limiting applications. The results of the study indicate that with the incorporation of certain combinations of structural elements, dyes can be synthesized which have greatly increased effective cross sections as high as $152.5 \times 10^{-48} \text{ cm}^4 \text{ s/photon mol.}$ in benzene solution at 800 nm using 8-ns pulses. This value is orders of magnitude higher than com. available organic dyes measured at the same wavelength. Although the process is thought to involve a combination of two-photon absorption and excited state absorption phenomena, the information gathered from these new families of dyes has provided an important first step in producing improved materials for use in many different two-photon technol. application.
 IT 143084-55-3P 143084-56-4P 153846-91-4P
 202831-61-6P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (intermediate; preparation of highly active 2-photon dyes)
 RN 143084-55-3 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)

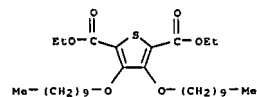


L5 ANSWER 18 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

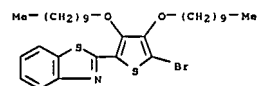
RN 143084-56-4 CAPLUS
 CN 2-Thiophenecarboxylic acid, 5-(2-benzothiazolyl)-3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



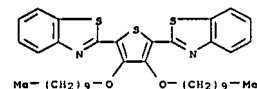
RN 153846-91-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)-, diethyl ester (9CI) (CA INDEX NAME)



RN 202831-61-6 CAPLUS
 CN Benzothiazole, 2-[5-bromo-3,4-bis(decyloxy)-2-thienyl]- (9CI) (CA INDEX NAME)



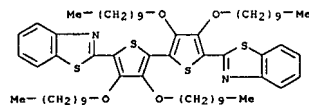
IT 129922-11-8P, 3,4-Bis(decyloxy)-2,5-bis(2-benzothiazolyl)thiophene
 197969-53-2P, 3,3',4,4'-Tetrakis(decyloxy)-5,5'-bis(2-benzothiazolyl)-2,2'-bithiophene
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of highly active 2-photon dyes)
 RN 129922-11-8 CAPLUS
 CN Benzothiazole, 2,2'-[3,4-bis(decyloxy)-2,5-thiophenediyl]bis- (9CI) (CA INDEX NAME)



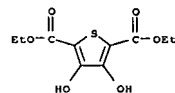
10538995.trn

L5 ANSWER 18 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

RN 197969-53-2 CAPLUS
 CN Benzothiazole, 2,2'-[3,3',4,4'-tetrakis(decyloxy)[2,2'-bithiophene]-5,5'-diyl]bis- (9CI) (CA INDEX NAME)

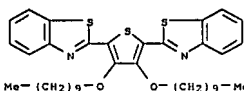


IT 1822-66-8, Diethyl 3,4-dihydroxy-2,5-thiophenedicarboxylate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; preparation of highly active 2-photon dyes)
 RN 1822-66-8 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, 2,5-diethyl ester (CA INDEX NAME)



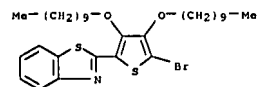
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
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L5 ANSWER 19 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1998:33766 CAPLUS
 DOCUMENT NUMBER: 128:153818
 TITLE: The design and synthesis of new organic molecules with large two-photon absorption cross-sections for limiting applications
 AUTHOR(S): Reinhardt, B. A.; Brott L. L.; Clarson, S. J.; Kannan, R.; Dillard, A. G.
 CORPORATE SOURCE: U.S. Air Force Wright Laboratory, Polymer Branch, WL/MLBP Materials Directorate, Wright-Patterson AFB, OH, 45433-7750, USA
 SOURCE: Materials Research Society Symposium Proceedings (1997), 479(Materials for Optical Limiting II), 3-8
 CODEN: MRSPDH; ISSN: 0272-9172
 PUBLISHER: Materials Research Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The mol. structure/nonlinear optical (NLO) property relationship is explored with seven recently synthesized chromophores. Two sym. compds. were made using electron withdrawing groups separated by an electron rich core while five asym. mols. were developed using electron donating and withdrawing groups coupled by a π electron bridging group. Pendant chains were added to some of the chromophores to improve processability. Their syntheses are described and their optical limiting properties discussed.
 IT 129922-11-8P 197969-53-2P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (design and preparation of organic mols. with large two-photon absorption cross-sections for optical limiting applications)
 RN 129922-11-8 CAPLUS
 CN Benzo[1,2-b:4,5-b']dithiophene, 2,2'-bis([3,4-bis(decyloxy)-2,5-thiophenediyl])bis- (9CI) (CA INDEX NAME)



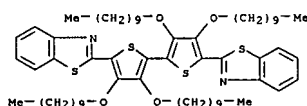
RN 197969-53-2 CAPLUS
 CN Benzo[1,2-b:4,5-b']dithiophene, 2,2'-bis([3,3',4,4'-tetrakis(decyloxy)[2,2'-bithiophene]-5,5'-diyl])bis- (9CI) (CA INDEX NAME)

L5 ANSWER 19 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

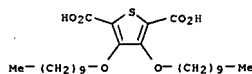


REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
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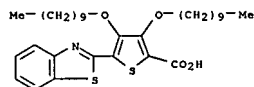
L5 ANSWER 19 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



IT 143084-55-3
 RL: RCT (Reactant); RACT (Reactant or reagent) (design and preparation of organic mols. with large two-photon absorption cross-sections for optical limiting applications)
 RN 143084-55-3 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



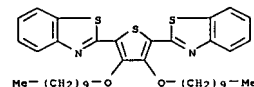
IT 143084-56-4P 202831-61-6P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (design and preparation of organic mols. with large two-photon absorption cross-sections for optical limiting applications)
 RN 143084-56-4 CAPLUS
 CN 2-Thiophenecarboxylic acid, 5-(2-benzothiazolyl)-3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



RN 202831-61-6 CAPLUS
 CN Benzo[1,2-b:4,5-b']dithiophene, 2-[5-bromo-3,4-bis(decyloxy)-2-thienyl]- (9CI) (CA INDEX NAME)

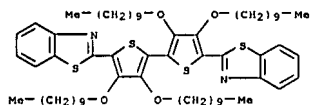
L5 ANSWER 20 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:702997 CAPLUS
 DOCUMENT NUMBER: 127:332778
 TITLE: Optical power limiting in solution via two-photon absorption: new aromatic heterocyclic dyes with greatly improved performance
 AUTHOR(S): Reinhardt, Bruce A.; Brott, Lawrence L.; Clarson, Stephen J.; Kannan, Ramamurthi; Dillard, Ann G.
 CORPORATE SOURCE: Polymer Branch, WL/MLBP Materials Directorate, U. S. Air Force Research Laboratory, Wright-Patterson AFB, OH, 45433-7750, USA
 SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1997), 3146(Nonlinear Optical Liquids and Power Limiters), 2-11
 CODEN: PSISDG; ISSN: 0277-786X
 PUBLISHER: SPIE-The International Society for Optical Engineering
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Organic compds. which exhibit optical power limiting exclusively via a two-photon absorption mechanism have shown only little promise for providing the limiting activity necessary for the practical protection of eyes and sensors. Unfortunately, there have been few systematic studies of the mol. structure/two-photon absorption property relationships for orgs. documented in the literature. In order to enable the design and synthesis of new mols. with much larger two-photon absorption cross-sections and improved limiting properties, the synthetic chemist must have access to well defined structure/property data. In an attempt to fill this void, work has centered on the design and synthesis of several new families of aromatic heterocyclic chromophores with systematic variations in their mol. structures. Careful characterization of these new materials in solution has produced some well-defined structure/two-photon property relationships at 800 nm. The design and synthesis of these materials are discussed with special emphasis of how the flexibility of the synthetic scheme employed enables the incorporation of these chromophores into a wide variety of materials forms. The characterization of the two-photon properties of these materials and the relationship of these results to their optical limiting behavior in solution will also be reviewed.
 IT 129922-11-8P 197969-53-2P
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (preparation of aromatic heterocyclic dyes with optical power limiting in solution via two-photon absorption)
 RN 129922-11-8 CAPLUS
 CN Benzo[1,2-b:4,5-b']dithiophene, 2,2'-bis([3,4-bis(decyloxy)-2,5-thiophenediyl])bis- (9CI) (CA INDEX NAME)

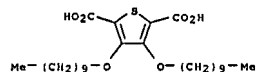


L5 ANSWER 20 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

RN 197969-53-2 CAPLUS
 CN Benzothiazole, 2,2'-(3,3',4,4'-tetrakis(decyloxy)[2,2'-bithiophene]-5,5'-diyl)bis- (9CI) (CA INDEX NAME)



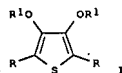
IT 143084-55-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; preparation of aromatic heterocyclic dyes with optical power limiting in solution via two-photon absorption)
 RN 143084-55-3 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



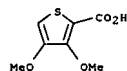
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
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L5 ANSWER 21 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:656066 CAPLUS
 DOCUMENT NUMBER: 125:328421
 TITLE: Improved preparation of 3,4-dimethoxythiophene
 AUTHOR(S): Merz, Andreas; Rehm, Christina
 CORPORATE SOURCE: Institut Organische Chemie, Universitaet Regensburg, Regensburg, D-93040, Germany
 SOURCE: Journal fuer Praktische Chemie/Chemiker-Zeitung (1996), 338(7), 672-674
 CODEN: JPCCEM; ISSN: 0941-1216
 PUBLISHER: Barth
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 125:328421
 GI

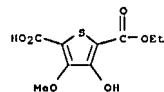


AB The title compound I (R = H, R1 = Me) was prepared starting from thiophenedicarboxylate I (R = CO2Et, R1 = H). The salt I (R = CO2Et, R1 = K) was methylated with Me2SO4 and 2 mol% crown-6 as phase transfer catalyst in toluene to give the Me ether I (R = CO2Et, R1 = Me) with 82% yield. The latter was saponified and the acid I (R = CO2H, R1 = Me) was decarboxylated by simple heating at 250° to yield the dimethoxythiophene I (R = H, R1 = Me) in 65% yield.
 IT 113589-62-1P 183430-03-7P 183430-04-8P
 183430-05-9P
 RL: BYP (Byproduct); PREP (Preparation)
 (preparation of dimethoxythiophene)
 RN 113589-62-1 CAPLUS
 CN 2-Thiophenecarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)

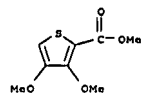


RN 183430-03-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3-hydroxy-4-methoxy-, 2-ethyl ester (9CI) (CA INDEX NAME)

L5 ANSWER 21 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



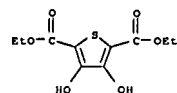
RN 183430-04-8 CAPLUS
 CN 2-Thiophenecarboxylic acid, 3,4-dimethoxy-, methyl ester (9CI) (CA INDEX NAME)



RN 183430-05-9 CAPLUS
 CN Thiophene-3-ol, 4-methoxy- (9CI) (CA INDEX NAME)



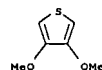
IT 1822-66-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of dimethoxythiophene)
 RN 1822-66-8 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, 2,5-diethyl ester (CA INDEX NAME)



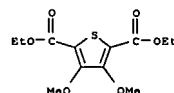
IT 51792-34-8P, 3,4-Dimethoxythiophene 177364-92-0P
 177364-96-4P 183430-02-6P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of dimethoxythiophene)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)

10538995.trn

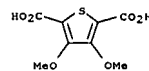
L5 ANSWER 21 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



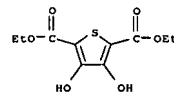
RN 177364-92-0 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy-, diethyl ester (9CI) (CA INDEX NAME)



RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)

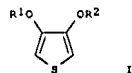


RN 183430-02-6 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, diethyl ester, dipotassium salt (9CI) (CA INDEX NAME)

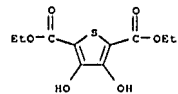


● 2 K

L5 ANSWER 22 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1996:260464 CAPLUS
 DOCUMENT NUMBER: 125:10524
 TITLE: A facile synthesis of 3,4-dialkoxythiophenes
 AUTHOR(S): Coffey, M.; McKellar, B. R.; Reinhardt, B. A.;
 Nijakowski, T.; Feld, W. A.
 CORPORATE SOURCE: Dep. Chem., Wright State Univ., Dayton, OH, 45435,
 USA
 SOURCE: Synthetic Communications (1996), 26(11), 2205-12
 PUBLISHER: CODEN: SYNCV; ISSN: 0039-7911
 DOCUMENT TYPE: Dekker
 LANGUAGE: Journal
 OTHER SOURCE(S): English
 GI CASREACT 125:10524

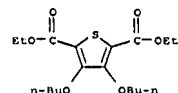


AB Dialkylation of di-Et 3,4-dihydroxythiophenedicarboxylate followed by
 ester hydrolysis and acid decarboxylation provides a general route to
 3,4-dialkoxythiophenes I (R1 = R2 = Me, Bu, C10H21, CH2Ph; R1R2 = CH2CH2,
 CH2CH2CH2).
 IT 1822-66-B
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of dialkoxythiophenes)
 RN 1822-66-B CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, 2,5-diethyl ester (CA
 INDEX NAME)

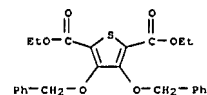


IT 38321-97-0P 143084-55-3P 153846-91-4P
 177364-92-0P 177364-93-1P 177364-95-3P
 177364-96-4P 177364-97-5P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (preparation of dialkoxythiophenes)
 RN 38321-97-0 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(phenylmethoxy)- (9CI) (CA INDEX
 NAME)

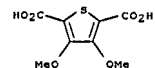
L5 ANSWER 22 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



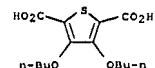
RN 177364-95-3 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(phenylmethoxy)-, diethyl ester
 (9CI) (CA INDEX NAME)



RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)

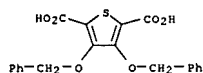


RN 177364-97-5 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dibutoxy- (9CI) (CA INDEX NAME)

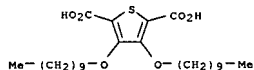


IT 51792-34-8P 126673-34-5P 156112-75-3P
 177364-99-7P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of dialkoxythiophenes)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)

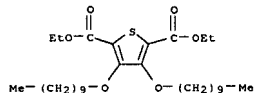
L5 ANSWER 22 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



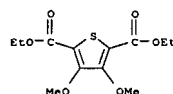
RN 143084-55-3 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



RN 153846-91-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)-, diethyl ester (9CI)
 (CA INDEX NAME)

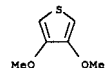


RN 177364-92-0 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy-, diethyl ester (9CI) (CA
 INDEX NAME)

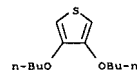


RN 177364-93-1 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dibutoxy-, diethyl ester (9CI) (CA
 INDEX NAME)

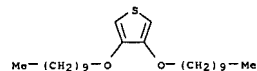
L5 ANSWER 22 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



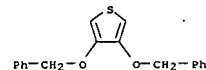
RN 126673-34-5 CAPLUS
 CN Thiophene, 3,4-dibutoxy- (9CI) (CA INDEX NAME)



RN 156112-75-3 CAPLUS
 CN Thiophene, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



RN 177364-99-7 CAPLUS
 CN Thiophene, 3,4-bis(phenylmethoxy)- (9CI) (CA INDEX NAME)



L5 ANSWER 23 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1994:606620 CAPLUS
 DOCUMENT NUMBER: 121:206620
 TITLE: Preparation of tailored length thiophene benzobisthiazole oligomers with solubilizing decyloxy pendants for third order nonlinear optical property correlations
 AUTHOR(S): Unroe, M. R.; Reinhardt, B. A.
 CORPORATE SOURCE: Wright Lab., Wright-Patterson AFB, OH, USA
 SOURCE: Report (1992), WL-TR-92-4070; Order No. AD-A259390, 23

pp. Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1993, 93(9),
 Abstr. No. 325,486
 Report
 DOCUMENT TYPE: English
 LANGUAGE: English

AB In an effort to better understand the relation between mol. weight and third-order nonlinear optical activity for condensation polymers, thiophene-containing benzobisthiazoles are synthesized via a trimethylsilyl polyphosphate-catalyzed condensation of a bis-o-aminothiophenol monomer and a didecyloxythiophenedicarboxylic acid. The phys. and chemical characterization of these oligomers, including mol. weight detns., are summarized. The enhancement of the bulk susceptibility and second mol. hyperpolarizability are demonstrated to increase with increasing oligomer length. Based on the data from femtosecond degenerate four-wave mixing expts., the second hyperpolarizability of the oligomers is enhanced by two-photon resonance.

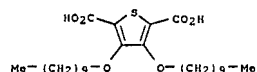
IT 143084-55-3DP, polymers with bis(o-aminothiophenols)
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);

SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
 (Preparation of tailored length thiophene benzobisthiazole oligomers with

solubilizing decyloxy pendants for third order nonlinear optical property)

RN 143084-55-3 CAPLUS

CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



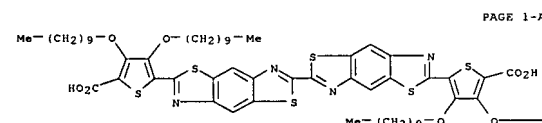
L5 ANSWER 24 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1992:512531 CAPLUS
 DOCUMENT NUMBER: 117:112531
 TITLE: Synthesis of substituted thiophene-benzobisthiazole oligomers for molecular weight-third order NLO property correlations
 AUTHOR(S): Unroe, Marilyn R.; Reinhardt, Bruce A.
 CORPORATE SOURCE: Polym. Branch, Wright Lab., Wright-Patterson AFB, OH, 45433-6533, USA
 SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1992), 1626(Nonlinear Opt. III), 450-9
 CODEN: PSISDG; ISSN: 0277-786X

DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB In an effort to better understand the relationship between mol. weight and 3rd-order nonlinear optical (NLO) activity for condensation polymers, a series of oligomeric thiophene-containing benzobisthiazoles are prepared by a trimethylsilyl phosphate-catalyzed condensation of a bis-o-aminothiophenol monomer and a didecyloxythiophenedicarboxylic acid. The phys. and chemical characterization of these oligomers are summarized. The enhancement of the bulk susceptibility and 2nd mol. hyperpolarizability increase with increasing oligomer length. Based on the data from femtosecond degenerate 4-wave mixing expts., the 2nd hyperpolarizability of the oligomers is enhanced by 2-photon resonance.

IT 143084-59-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(Preparation and reaction of, with aminothiophenol)
 RN 143084-59-7 CAPLUS

CN 2-Thiophenecarboxylic acid, 5,5'-(2,2'-bibenzo[1,2-d:4,5-d']bisthiazole-6,6'-diyl)bis[3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



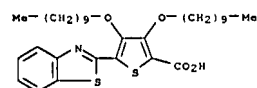
PAGE 1-A

L5 ANSWER 24 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

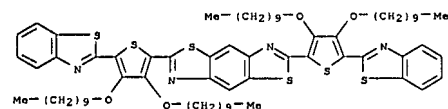
PAGE 1-B

Me-(CH₂)₉-O

IT 143084-56-4P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (Preparation and reaction of, with diaminobenzenedithiol)
 RN 143084-56-4 CAPLUS
 CN 2-Thiophenecarboxylic acid, 5-(2-benzothiazolyl)-3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)



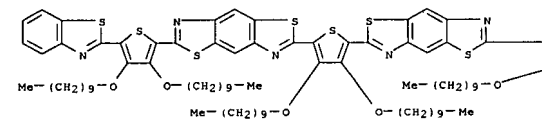
IT 143084-58-6P 143108-93-4P 143108-94-5P
 143108-95-6P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (Preparation and third-order nonlinear optical properties of, mol. weight in relation to)
 RN 143084-58-6 CAPLUS
 CN Benzo[1,2-d:4,5-d']bisthiazole, 2,6-bis[5-(2-benzothiazolyl)-3,4-bis(decyloxy)-2-thienyl]- (9CI) (CA INDEX NAME)



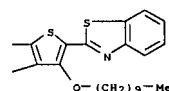
RN 143108-93-4 CAPLUS
 CN Benzo[1,2-d:4,5-d']bisthiazole, 2,2'-(3,4-bis(decyloxy)-2,5-thiophenediyl)bis[6-[5-(2-benzothiazolyl)-3,4-bis(decyloxy)-2-thienyl]- (9CI) (CA INDEX NAME)

L5 ANSWER 24 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

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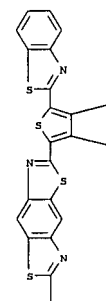


PAGE 1-B

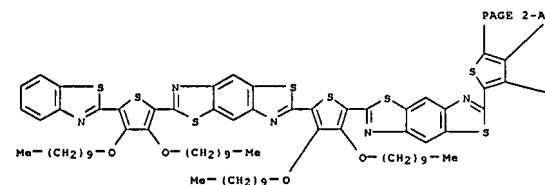
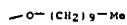


RN 143108-94-5 CAPLUS
 CN Benzo[1,2-d:4,5-d']bisthiazole, 2,6-bis[5-(2-benzothiazolyl)-3,4-bis(decyloxy)-2-thienyl]benzo[1,2-d:4,5-d']bisthiazol-2-yl]-3,4-bis(decyloxy)-2-thienyl]- (9CI) (CA INDEX NAME)

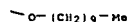
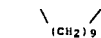
PAGE 1-A



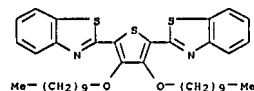
L5 ANSWER 24 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
PAGE 1-B



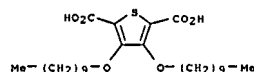
PAGE 2-B



L5 ANSWER 24 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)

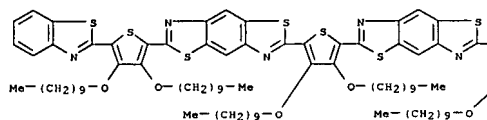


IT 143084-55-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with aminothiophenol)
RN 143084-55-3 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(decyloxy)- (9CI) (CA INDEX NAME)

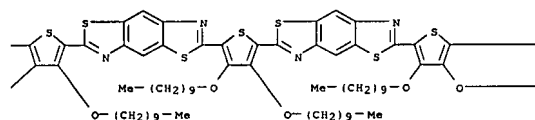


L5 ANSWER 24 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
RN 143108-95-6 CAPLUS
CN Benzo[1,2-d:4,5-d']bis-thiazole, 2,2'-[3,4-bis(decyloxy)-2,5-thiophenediyl]bis[6-[5-[6-[5-(2-benzothiazolyl)-3,4-bis(decyloxy)-2-thienyl]benzo[1,2-d:4,5-d']bis-thiazol-2-yl]-3,4-bis(decyloxy)-2-thienyl]- (9CI) (CA INDEX NAME)

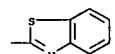
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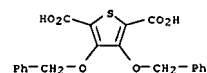
PAGE 1-C



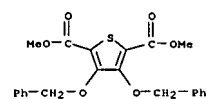
IT 129922-11-8P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, as model for thiophene-benzobisthiazole oligomers)
RN 129922-11-8 CAPLUS
CN Benzo[1,2-d:4,5-d']bis-thiazole, 2,2'-[3,4-bis(decyloxy)-2,5-thiophenediyl]bis- (9CI) (CA INDEX NAME)

L5 ANSWER 25 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1972:501318 CAPLUS
DOCUMENT NUMBER: 77:101318
TITLE: Preparation of thiophene esters by the Hinsberg reaction
AUTHOR(S): Chadwick, D. J.; Chambers, J.; Meakins, G. D.; Snowden, R. L.
CORPORATE SOURCE: Dyson Perrins Lab., Univ. Oxf., Oxford, UK
SOURCE: Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (1972-1999) (1972), (16), 2079-81
CODEN: JCPRB4; ISSN: 0300-922X

DOCUMENT TYPE: Journal
LANGUAGE: English
GI For diagram(s), see printed CA Issue.
AB 3,4-Disubstituted 2-thiophenecarboxylates and 2,5-thiophenedicarboxylates were prepared by the reaction of α -diketones (biacetyl, benzil, 4,4'-dimethoxybenzil, and phenanthroquinone) with dialkyl thiodiacetates in 5mMCO₂-Me₃COH. E.g., 4,4'-dimethoxybenzil with (EtO₂CCH₂)₂S gave 5-(ethoxycarbonyl)-3,4-bis(p-methoxyphenyl)-2-thiophenecarboxylic acid (I, R = CO₂H, R₁ = Et) which was decarboxylated by Cu bronze at 250° giving I (R = H, R₁ = Et). Saponification of I (R = H, R₁ = Et) gave 3,4-bis(p-methoxyphenyl)-2-thiophenecarboxylic acid (I, R = R₁ = H), which reacted with CH₂:CMe₂ in H₂SO₄-Et₂O at -30° to 20° to give tert-Bu 3,4-bis(p-methoxyphenyl)-2-thiophenecarboxylate (I, R = H, R₁ = CMe₃).
IT 38321-97-0P 38321-98-1P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 38321-97-0 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(phenylmethoxy)- (9CI) (CA INDEX NAME)



RN 38321-98-1 CAPLUS
CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(phenylmethoxy)-, 2,5-dimethyl ester (CA INDEX NAME)



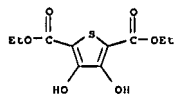
L5 ANSWER 26 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1967:402953 CAPLUS
 DOCUMENT NUMBER: 67:2953
 TITLE: Synthesis of potential anticancer agents. I. Synthesis of substituted thiophenes
 AUTHOR(S): Gogte, V. N.; Shah, L. G.; Tilak, Bal D.; Gadekar, Kumudini N.; Sahasrabudhe, M. B.
 CORPORATE SOURCE: Univ. Bombay, Bombay, India
 SOURCE: Tetrahedron (1967), 23(5), 2437-41
 CODEN: TETRA; ISSN: 0040-4020
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 67:2953
 G1 For diagram(s), see printed CA issue.
 AB In view of the anticancer activity of thiophene-2,5-dicarboxylic acid

(II), a series of derivs. of I were prepared. Starting from 2,5-dichloromethylthiophene, thiophene-2,5-dicarboxaldehyde, thiophene-2,5-dimethylenylthiuronium dichloride (II), and 2,5-dimercaptomethylthiophene were prepared. 3,4-Dihydroxythiophene, a thiophene isomer of catechol, was prepared by decarboxylation of 2,5-dicarboxy-3,4-dihydroxythiophene. Of the compds. reported, II proved highly active against Yoshida sarcoma in rats.

IT 14282-56-SP 14282-57-SP 14282-58-TP
 14325-48-SP
 RL: SPN (Synthetic preparation); PREP (Preparation) (preparation of)

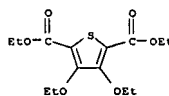
RN 14282-56-5 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, diethyl ester, disodium salt (8CI, 9CI) (CA INDEX NAME)



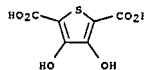
● 2 Na

RN 14282-57-6 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-diethoxy-, diethyl ester (8CI) (CA INDEX NAME)

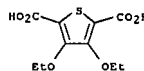
L5 ANSWER 26 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



RN 14282-58-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (8CI, 9CI) (CA INDEX NAME)



RN 14325-48-5 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-diethoxy- (8CI) (CA INDEX NAME)



L5 ANSWER 27 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1957:34805 CAPLUS
 DOCUMENT NUMBER: 51:34805
 ORIGINAL REFERENCE NO.: 51:6601h-1,6602a-d
 TITLE: Reductions derived from
 3,4-dihydroxy-2,5-dicarboxylic
 esters of furan, thiophene, N-phenylpyrrole, and
 selenophene
 AUTHOR(S): v. Euler, Hans; Hasselquist, Hans
 CORPORATE SOURCE: Univ. Stockholm
 SOURCE: Hoppe-Seyler's Zeitschrift fuer Physiologische Chemie (1956), 306, 49-55
 CODEN: HSZPAZ; ISSN: 0018-4888

DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 G1 For diagram(s), see printed CA issue.
 AB cf. C.A. 49, 14844a. Compds. having the general structure MeO2CC(OH)C(OH)C(CO2Me)R (I) where R is O, S, Se, or Ph, were found to undergo ring cleavage under conditions ranging from solution in warm H2O to heating with weakly alkaline solns. or treatment with Tillmans reagent to give products having the general structure [MeO2CC(RH)C(OH)]2 (II). Di-Me 3,4-dihydroxyfuran-2,5-dicarboxylate (I, R = O), λ 282.5 mμ (0.15 y/ml. in H2O) (log ε 4.25), gave no reaction with AcOH-phenylhydrazine but gave a di-Ac derivative m. 141° and was oxidized by iodine solution to a product that gave yellowish red crystals with phenylhydrazine, m. 130-2°. On treatment of the ester with an equivalent of alkali, a salt was obtained. The salt or the ester gave 3,4-dihydroxyfuran-2-carboxylic acid, m. 139° (decomposition with gas evolution), on heating in the absence of air with 2N NaOH. The effect of the ring-cleavage product, di-Me 2,3,4,5-tetrahydroxy-2,4-hexadienedioate (II, R = O), on the viscosity of a pectin solution was measured and compared to the similar effect of ascorbic acid. Di-Me

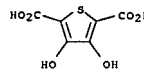
3,4-dihydroxythiophene-2,5-dicarboxylate (II, R = S), m. 174° (di-Ac derivative, m. 105.5-6.5°), on ring cleavage in alkaline solution gave di-Me 2,3,4-trihydroxy-5-thiol-2,4-hexadienedioate (II, R = S). Di-Me N-phenyl-3,4-dihydroxypyrrrole-2,5-dicarboxylate (I, R = NPh), m. 192° (di-Ac derivative, m. 188°), underwent ring cleavage to di-Me 2,3,4-trihydroxy-5-selenyl-2,4-hexadienedioate (II, R = NPh). The di-Et derivative of di-Me 3,4-dihydroxyselenophene-2,5-dicarboxylate (I, R = Se) was prepared by saturating 4.5 g. NaOH in 10 ml. H2O with H2Se, adding 19 g. ClCH2CO2H, 20 g. Na2CO3, and 10 ml. H2O, then adding 22 g. concentrated H2SO4

after 1 hr., heating, evaporating to dryness, extracting with MeOH, separating the salt, diluting with H2O, and extracting with C6H6. Di-Me selenodiglycolate (1.6 g.), bl 129-30° was treated with 1.5 g. di-Et oxalate and 0.75 g. Na in 15 ml. MeOH. Treatment with concentrated HCl and recrystn. from EtOH gave 0.75 g. di-Me 3,4-diethoxyselenophene-2,5-dicarboxylate, m. 209°. Treatment with Ac2O gave di-Me 3,4-diacetoxyselenophene-2,5-dicarboxylate, m. 141°. The selenophene ring was unstable, and cleaved in H2O at 50° to di-Me 2,3,4-trihydroxy-5-selenyl-2,4-hexadienedioate (II, R = Se). All the ring-cleavage products displayed biol. activity,

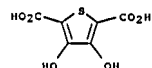
L5 ANSWER 27 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)
 inhibiting germination, mitosis, and the development of the Yoshida-Ascites carcinoma in rats. They decreased the viscosity of pectin

and mucoid solns. and increased the permeability of cells.
 IT 14282-58-7P, 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-
 RL: PREP (Preparation)
 (esters, and other derivs., reductone formation from)

RN 14282-58-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (8CI, 9CI) (CA INDEX NAME)

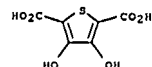


L5 ANSWER 28 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1952:17589 CAPLUS
 DOCUMENT NUMBER: 46:17589
 ORIGINAL REFERENCE NO.: 46:3038b-e
 TITLE: The preparation of 3,4-dimethoxy-2,5-dicarbethoxythiophene. 3,4-Dimethoxythiophene
 AUTHOR(S): Overberger, C. G.; Lal, Joginder
 CORPORATE SOURCE: Polytech. Inst. of Brooklyn, Brooklyn, NY
 SOURCE: Journal of the American Chemical Society (1951), 73, 2956-7
 CODEN: JACSAT; ISSN: 0002-7863
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 AB Na (35 g. in 350 cc. alc.), 146 g. (CO₂Et)₂, and 103 g. S(CH₂CO₂Et)₂ yielded 102 g. 3,4-dihydroxy-2,5-dicarbethoxythiophene (I), m. 134.5-35° (from C₆H₆ or MeOH). I dibenzoxide, transparent, regular crystals from hexane, m. 96.5-7.5°, diacetate, transparent crystals from EtOH, m. 80.5-1.2°. CH₂N₂ (8.5 g.) in cold Et₂O added to 9 g. I in 50 cc. dioxane, the mixture let stand 1-2 hrs. in an ice bath, dilute HCl added, the Et₂O layer concentrated, and a few drops of water added yielded 9.5 g. 3,4-dimethoxy-2,5-dicarbethoxythiophene (II), white needles from aqueous EtOH, m. 52-3°. I Na salt with Me₂SO₄ yielded 50.7% II, m. 52-3°. II (3 g.) in 100 cc. MeOH and 2 g. KOH in 100 cc. water refluxed 2-4 hrs. yielded 2.21 g. 3,4-dimethoxy-2,5-dicarbethoxythiophene (III), decompose without melting at 260°. Powdered Cu (2 g.) and 15 g. III heated to 180-90° at 20-40 mm. yielded 8.15 g. 3,4-dimethoxythiophene (IV), b₁₇ 110°, n_D25 1.5386, d₄25 1.2081. IV (4 g.) in 25 cc. Ac₂O and 8 g. fuming HNO₃ in 50 cc. AcOH yielded 4 g. 3,4-dimethoxy-2,5-dinitrothiophene, bright yellow needles from petr. ether, m. 116.5-17.2°.
 IT 14282-58-7, 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (esters)
 RN 14282-58-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (8CI, 9CI) (CA INDEX NAME)

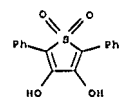


IT 51792-34-8P, Thiophene, 3,4-dimethoxy- 177364-92-0P, 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy-, diethyl ester 177364-96-4P, 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- 859487-28-8P, Thiophene, 3,4-dimethoxy-2,5-dinitro- RL: PREP (Preparation of)
 (preparation of)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)

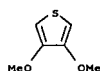
L5 ANSWER 29 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1950:14427 CAPLUS
 DOCUMENT NUMBER: 44:14427
 ORIGINAL REFERENCE NO.: 44:2048c-e
 TITLE: Ultraviolet absorption spectra and acidic strengths of certain dihydroxythiophene-1-oxides and 1-dioxides
 AUTHOR(S): Eastman, Richard H.; Wagner, Robert M.
 CORPORATE SOURCE: Stanford Univ., CA
 SOURCE: Journal of the American Chemical Society (1949), 71, 4089-94
 CODEN: JACSAT; ISSN: 0002-7863
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 AB 2,5-Dicarbomethoxy-3,4-dihydroxythiophene (II), 2,5-dicarbethoxy-3,4-dihydroxythiophene 1-oxide (III), 2,5-dicarbethoxy-3,4-dihydroxythiophene 1-dioxide (III'), 3,4-dihydroxy-2,5-diphenylthiophene 1-dioxide (IV), 2,5-dicarbethoxy-3,4-dihydroxyfuran (V), 2,5-dicarbethoxy-3,4-dihydroxy-2,4-cyclopentadiene, and N-ethyl-2,5-dicarbethoxy-3,4-dihydroxypyrrole (VI) were prepared by the oxalic ester condensations. The elec. effect of the S atom in various states of oxidation (I, II, III, IV) and that of other hetero atoms (V, VI) on the properties of the ester condensation products were assessed by measurement of acidic strengths and ultraviolet absorption. This study provided further evidence for an expanded valence shell for the S atom in the sulfone configuration.
 IT 14282-58-7, 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (esters and oxides, spectra of)
 RN 14282-58-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (8CI, 9CI) (CA INDEX NAME)



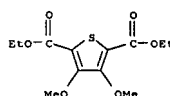
IT 73764-52-0, 3,4-Thiophenediol, 2,5-diphenyl-, 1,1-dioxide (spectrum of)
 RN 73764-52-0 CAPLUS
 CN 3,4-Thiophenediol, 2,5-diphenyl-, 1,1-dioxide (6CI, 9CI) (CA INDEX NAME)



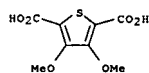
L5 ANSWER 28 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



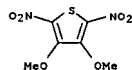
RN 177364-92-0 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy-, diethyl ester (9CI) (CA INDEX NAME)



RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)



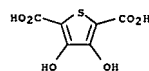
RN 859487-28-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy-2,5-dinitro- (5CI) (CA INDEX NAME)



L5 ANSWER 30 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1949:11068 CAPLUS
 DOCUMENT NUMBER: 43:11068
 ORIGINAL REFERENCE NO.: 43:22361,2237a
 TITLE: 3,4-Dihydroxy-2,5-thiophenedicarboxylic acid
 INVENTOR(S): Turnbull, S. G., Jr.
 PATENT ASSIGNEE(S): E. I. du Pont de Nemours & Co.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|----------|-----------------|----------|
| US 2453102 | | 19481102 | US 1944-523914 | 19440225 |

 AB 3,4-Dihydroxy-2,5-dicarbethoxythiophene (I) was hydrolyzed to the corresponding acid (II) at 110-20° in a melt of AcONa.2H₂O, caustic, and water, and the mixture acidified, extracted with Et₂O, and recrystd. from MeOH. II m. 190° (decomposition) and gave a deep blue solution in alc. FeCl₃. I 5.2 parts heated 16 hrs. in NH₃ 25 parts in a glass-lined steel bomb at 115-30° gave the diamide (1.2 parts), m. above 250°, both caustic- and acid-insol. 3,4-Dimethoxy-2,5-dicarbethoxythiophene, m. 295-300° (decomposition), was obtained from I, KOH, and Me₂SO₄. From II and Ac₂O was obtained the corresponding diacetate, m. 314-15° (decomposition).
 IT 14282-58-7, 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (and derivs.)
 RN 14282-58-7 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (8CI, 9CI) (CA INDEX NAME)



IT 14282-59-8, 3,4-Thiophenediol (diesters)
 RN 14282-59-8 CAPLUS
 CN 3,4-Thiophenediol (8CI, 9CI) (CA INDEX NAME)

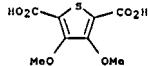


IT 14282-59-8P, 3,4-Thiophenediol 177364-96-4P, 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- 874512-65-9P, 2,5-Thiophenedicarboxamide, 3,4-dihydroxy- (preparation of)
 RN 14282-59-8 CAPLUS
 CN 3,4-Thiophenediol (8CI, 9CI) (CA INDEX NAME)

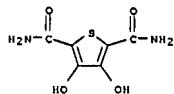
L5 ANSWER 30 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



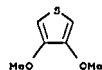
RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)



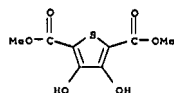
RN 874512-65-9 CAPLUS
 CN 2,5-Thiophenedicarboxamide, 3,4-dihydroxy- (5CI) (CA INDEX NAME)



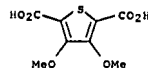
L5 ANSWER 31 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN (Continued)



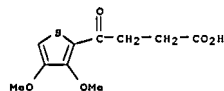
RN 58416-04-9 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, dimethyl ester (6CI, 9CI)
 (CA INDEX NAME)



RN 177364-96-4 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- (9CI) (CA INDEX NAME)



RN 854627-25-1 CAPLUS
 CN 2-Thiophenebutyric acid, 3,4-dimethoxy-γ-oxo- (4CI) (CA INDEX NAME)



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ACCESSION NUMBER: 1946:6734 CAPLUS
 DOCUMENT NUMBER: 40:6734
 ORIGINAL REFERENCE NO.: 40:11611,1162a-b
 TITLE: Some derivatives of 3,4-dioxythiophene
 AUTHOR(S): Fager, Edward W.
 CORPORATE SOURCE: Yale Univ.
 SOURCE: Journal of the American Chemical Society (1945), 67, 2217-18
 CODEN: JACSAT; ISSN: 0002-7863

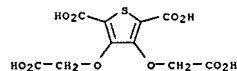
DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 OTHER SOURCE(S): CASREACT 40:6734
 AB S(CH₂CO₂Me)₂ (275 g.) and 267 g. (CO₂Me)₂ in 750 cc. absolute MeOH, added dropwise to 105 g. Na in 1 l. absolute MeOH at 5° (temperature kept below 30° during the addition) and the mixture finally refluxed 1 hr. the dry Na salt heated 30 min. at 100° with 1134 g. Me₂SO₄ and, after removal of the excess Me₂SO₄, with 750 cc. 6 N NaOH for 30 min., give 58.8% of 3,4-dimethoxy-2,5-dicarboxythiophene (I), decomp. above 250°; if the Na salt is decomposed with dilute H₂SO₄, there results 3,4-dihydroxy-2,5-dicarbomethoxythiophene, m. 180-80.5°. I (16.5 g.) and 2 g. Cu chromite in 50 cc. quinoline, heated in an N atmospheric for 30 min. at 180°, give 58% of 3,4-dimethoxythiophene (II), b₁₂ 108-15°. II (0.8 g.) and 1.6 g. AlCl₃ in 5 cc. C₆H₆, heated 20 min. at 60° and the product treated with a slight excess of BzCl, give the dibenzoate of 3,4-dihydroxythiophene (III), m. 109.5-10°; III is very sensitive to O and could not be isolated. II (12.45 g.) in 200 cc. C₆H₆ at 5°, treated dropwise with 13 g. of MeO₂CCH₂COCl and 10.15 cc. SnCl₄ in 75 cc. C₆H₆ at 5°, gives 50.5% of β-(3,4-dimethoxy-2-thienyl)propionic acid, m. 134.5-5.5°; various attempts at reduction failed.
 IT 14282-59-8, 3,4-Thiophenediol
 (derivs.)
 RN 14282-59-8 CAPLUS
 CN 3,4-Thiophenediol (8CI, 9CI) (CA INDEX NAME)



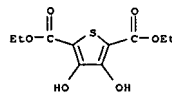
IT 51792-34-8P, Thiophene, 3,4-dimethoxy- 58416-04-9P, 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, dimethyl ester 177364-96-4P, 2,5-Thiophenedicarboxylic acid, 3,4-dimethoxy- 854627-25-1P, 2-Thiophenebutyric acid, 3,4-dimethoxy-γ-oxo-
 Rl: PREP (Preparation)
 (preparation of)
 RN 51792-34-8 CAPLUS
 CN Thiophene, 3,4-dimethoxy- (CA INDEX NAME)

L5 ANSWER 32 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1942:20528 CAPLUS
 DOCUMENT NUMBER: 36:20528
 ORIGINAL REFERENCE NO.: 36:3157g-1
 TITLE: Attempts toward synthesis of cantharidin. III. Condensation of ethyl 3,4-diketotetrahydro-2,5-furandicarboxylate with α-bromo esters
 AUTHOR(S): Iyer, S. H.; Guha, P. C.
 SOURCE: Journal of the Indian Institute of Science (1941), 23A, 159-67
 CODEN: JIISAD; ISSN: 0019-4964
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 AB cf. C. A. 33, 2134.8. Condensation of the di-Na derivative of di-Et 3,4-diketotetrahydro-2,5-furandicarboxylate with CH₂BrCO₂Et gives di-Et 3,4-dicarbomethoxymethoxy-2,5-furandicarboxylate, m. 65°, which on saponification affords the K salt of the tetracarboxylic acid and on acid hydrolysis (cold concentrated HCl) yields di-Et 3,4-dicarbomethoxy-2,5-furandicarboxylate (+H₂O), m. 221-5° (decomposition). The products obtained with the reaction on Et 2,5-diketotetrahydro-3,4-thiophenedicarboxylate are di-Et 3,4-dicarbomethoxy-2,5-thiophenedicarboxylate, m. 50°, the K salt of the tetracarboxylic acid, and di-Et 3,4-dicarbomethoxy-2,5-dithiophenedicarboxylate, m. 225-7° (decomposition).
 IT 854627-74-0, 2,5-Thiophenedicarboxylic acid, 3,4-bis(carboxymethoxy)- (derivs.)
 RN 854627-74-0 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-bis(carboxymethoxy)- (4CI) (CA INDEX NAME)



IT 1822-66-8, 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, diethyl ester (reaction with ethyl bromoacetate)
 RN 1822-66-8 CAPLUS
 CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-, 2,5-diethyl ester (CA INDEX NAME)



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ACCESSION NUMBER: 1910:9681 CAPLUS

DOCUMENT NUMBER: 4:9681

ORIGINAL REFERENCE NO.: 4:1750d-1,1751a-b

TITLE: Syntheses with Thiodiglycolic Ester

AUTHOR(S): Hineberg, O.

SOURCE: Freiburg i. B. Ber. (1910), 43, 901-6

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

OTHER SOURCE(S): CASREACT 4:9681

CI For diagram(s), see printed CA Issue.

AB Benzil and Et thiodiglycolate, in presence of MeONa, after some hrs. at the ordinary temperature, give 3,4-diphenylthiophene-2,5-dicarboxylic acid,

formula (I) below; colorless, lustrous needles from dilute alc.,

decomposes

and evolves CO₂ above 300°. The other product of the decompose is 3,4-diphenylthiophene. Phenanthrenequinone, under similar conditions, forms phenanthroisothiophene-2,5-dicarboxylic acid (II); slender, yellow needles from alc., decompose and evolves CO₂ 270°.

Phenanthroisothiophene is prepared by heating the preceding compound;

light

yellow plates from alc. + CHCl₃, m. 163°. When warmed with concentrate H₂SO₄ an intense, yellowish red color is produced. Me thiodiglycolate, MeONa and Et oxalate give dimethyl 3,4-dihydroxythiophene-2,5-dicarboxylate (III); colorless needles from alc., m. 178°. It

reduces NH₃-Ag solution, and with alc. and FeCl₃ gives a blue color,

changing

to red on the addition of Na₂CO₃. The ester is hydrolyzed with

difficulty

and gives light yellow salts with the alkali metals. Et thiodiglycolate,

Et oxalate and MeONa give (III) almost exclusively, but with EtONa

diethyl

3,4-dihydroxythiophene-2,5-dicarboxylate is produced; colorless needles,

m. 134°. It resembles (III) closely in general properties.

2-Carboethoxy-3-hydroxy-4-methylthiophene-5-carboxylic acid (IV), is

obtained from Et thiodiglycolate, Et pyruvate and MeONa; colorless

needles

from dilute alc., m. 233°. Boiling, dilute NaOH hydrolyzes it to

3-hydroxy-4-methylthiophene-5-carboxylic acid (V); long, hair-like

needles

from H₂O, m. 184°. Its constitution is supposed to be shown by the

fact that it gives a pale red color with FeCl₃.

Tetrahydrodihydroxyacenaphthoisothiophenedicarboxylic acid (VI), is

prepared from acenaphthenequinone, Et thiodiglycolate and MeONa; small,

colorless needles from alc., decomposes and evolves CO₂ and H₂O

250°. Its solution in H₂O decreases after repeated recrystn. from

alc.

IT 14282-58-7, 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy-

(esters)

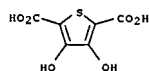
RN 14282-58-7 CAPLUS

CN 2,5-Thiophenedicarboxylic acid, 3,4-dihydroxy- (8CI, 9CI) (CA INDEX

NAME)

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(Continued)



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COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

174.38

518.34

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

CA SUBSCRIBER PRICE

-25.74

-25.74

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